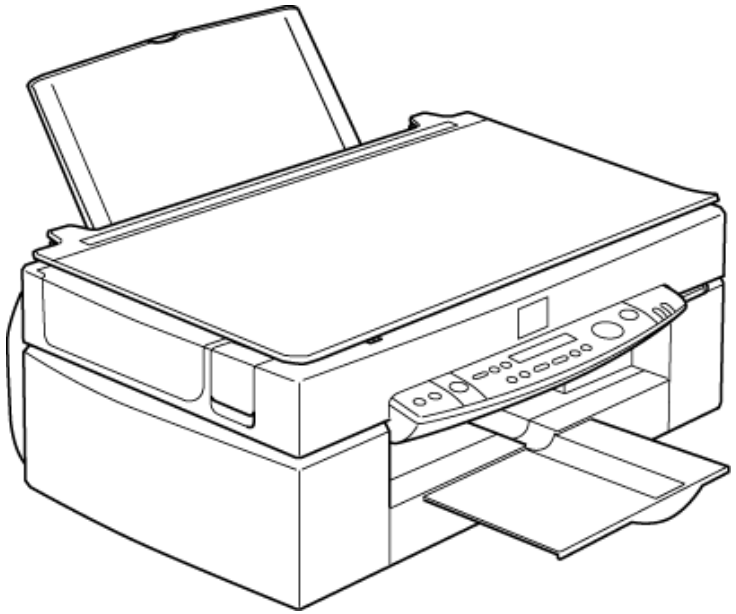
# SERVICE MANUAL



All-in-one printer, scanner, and copier

**EPSON STYLUS Scan 2500**

COLOR IMAGING EPSON

EPSON®

SEIJ99007

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# PRECAUTIONS

There are cautionary notes throughout the text to help you avoid personal injury or equipment damage.

**Signals a precaution which, if ignored, could result in serious or fatal personal injury. Great caution should be exercised in performing procedures preceded by a WARNING heading.**

**Signals a precaution which, if ignored, could result in damage to equipment.**

Always observe the measures listed below when performing repair or maintenance procedures.

## WARNING

1. Always disconnect the product from both the power source and host computer before performing any maintenance or repair procedure.
2. No work should be performed on the unit by persons unfamiliar with basic safety measures dictated for all electronics technicians in their line of work.
3. In performing testing described in this manual, do not connect the unit to a power source until instructed to do so. When the power supply cable must be connected, use extreme caution in working on the power supply and other electronic components.

## CAUTION

1. Repairs on EPSON products should be performed only by an EPSON-certified repair technician.
2. Make certain that the source voltage is the same as the rated voltage listed on the serial number/rating plate. If the EPSON product has a primary AC rating different from the available power source, do not connect it to the power source.
3. Always verify that the EPSON product has been disconnected from the power source before removing or replacing printed circuit boards and/or individual chips.
4. To protect sensitive microprocessors and circuitry, use static discharge equipment, such as anti-static wrist straps, when accessing internal components.
5. Replace malfunctioning components only with those components recommended by the manufacturer; introduction of second-source ICs or other nonapproved components may damage the product and void any applicable EPSON warranty.

# PREFACE

This manual describes basic functions, theory of electrical and mechanical operations, maintenance and repair procedures of EPSON STYLUS Scan 2500. The instructions and procedures included herein are intended for the experienced repair technicians, and attention should be given to the precautions on the preceding page. The chapters are organized as follows:

## CHAPTER 1. "Product Description"

***Provides a general overview and specifications of the product.***

## CHAPTER 2. "Operating Principles"

***Describes the theory of electrical and mechanical operations of the product.***

## CHAPTER 3. "Troubleshooting"

***Provides step-by-step procedures for troubleshooting.***

## CHAPTER 4. "Disassembly & Assembly"

***Describes step-by-step procedures for disassembling and assembling the product.***

## CHAPTER 5. "Adjustment"

***Provides Epson-approved methods for adjustment.***

## CHAPTER 6. "Maintenance"

***Provides preventive maintenance procedures and the lists of Epson-approved lubricants and adhesives required for servicing the product.***

## CHAPTER 7. "Appendix"

***Provides the following additional information for reference:***

- ***EEPROM Address Map***
- ***Connector Pin Assignment***
- ***Schematics***
- ***Circuit Diagrams***

## Revision Status

| Revision | Issued Date | Description |
|---|---|---|
| Revision A | October 5, 1999 | First release |
| | | |
| | | |
| | | |
| | | |

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CHAPTER

1

# PRODUCT DESCRIPTION

# 1.1 Features

The following specifications apply to the EPSON Stylus Scan 2500.

- ☐ High quality local copy
  - Three color copy modes Normal, Fine, and Photo
  - "Photo quality copy by Photo paper" enabled
  - Two B/W copy modes Normal, Fine
- ☐ High speed local copy
  - Normal B/W copy mode Max. 2.4 PPM (using "Memo" pattern)
  - Normal color copy mode Max. 1.2 PPM (using "DTP" pattern)
- ☐ Local copy settings from the control panel
  - Enlargement 50~200%
  - Multiple copies 1~20 copies
  - Brightness -2 ~ 2 (five steps)
  - Copy size protection Letter/Half Letter/5 x 8" A4/B5/A6

    (Copy size protection prevents the printhead from firing ink onto the platen in cases where the paper size loaded in the printer does not match the selected paper size.)
- ☐ PC Copy settings (determined from software application)
  - Auto Photo Fine
  - Auto Enlarge
  - Auto Layout
  - Background reduction
- ☐ Installed functions are the same as or equivalent to the EPSON Stylus Color 740 and the GT-7000.
- ☐ Small footprint 212 x 517 x 414 mm (HWD) machine only
  300 x 517 x 575 mm (HWD) parts extended

# 1.2 General Specifications

## 1.2.1 Local copy

1. Local copy

**Table 1-1. Local Copy Specifications**

| Mode | | Scan res. | Output mode | Print res. | Micro Weave | Dot Size | Head seq. | Media |
|---|---|---|---|---|---|---|---|---|
| B/W | Normal | 300x300 | Gray | 360x360 | Off | Normal | Bi-D | Normal |
| | Fine | 600x300 | Gray | 720x720 | On | Variable | Bi-D | Normal |
| Color | Normal | 300x300 | Full color | 360x360 | Off | Normal | Bi-D | Normal |
| | Fine | 600x600 | Full color | 720x720 | On | Variable | Bi-D | Normal |
| | Photo | 600x600 | Full color | 720x720 | On | Variable | Uni-D | Photo |

Output mode = data from the scanner ASIC to the printer

2. Enlargement: Default 100%
   Enlargement 120, 141, 200%
   Reduction 50, 70, 80, 93%
   (not continuous)
3. Brightness -2 (Darkest) ~ 0 (Default) ~ +2 (Lightest) (increments of one)
4. Multiple Copies 1~20 copies (one page at a time when using the ADF)
5. Copy size
   - Max. copy size 216 x 297mm (8.5 x 11.7inches) (Top, bottom, and both sides need 3mm margins)
   - Copy size protection A4/B5/A6 (A-size version) Letter/Half Letter/5x8" (Letter size version)

6. Printing paper size Normal paper A4/Letter/A5/Executive
Half letter/B5/A6/Index card
5x8”/8 x10”/Post card/Legal
Photo paper A4/ Letter/4x5”/Post card

## 1.2.2 Scan area

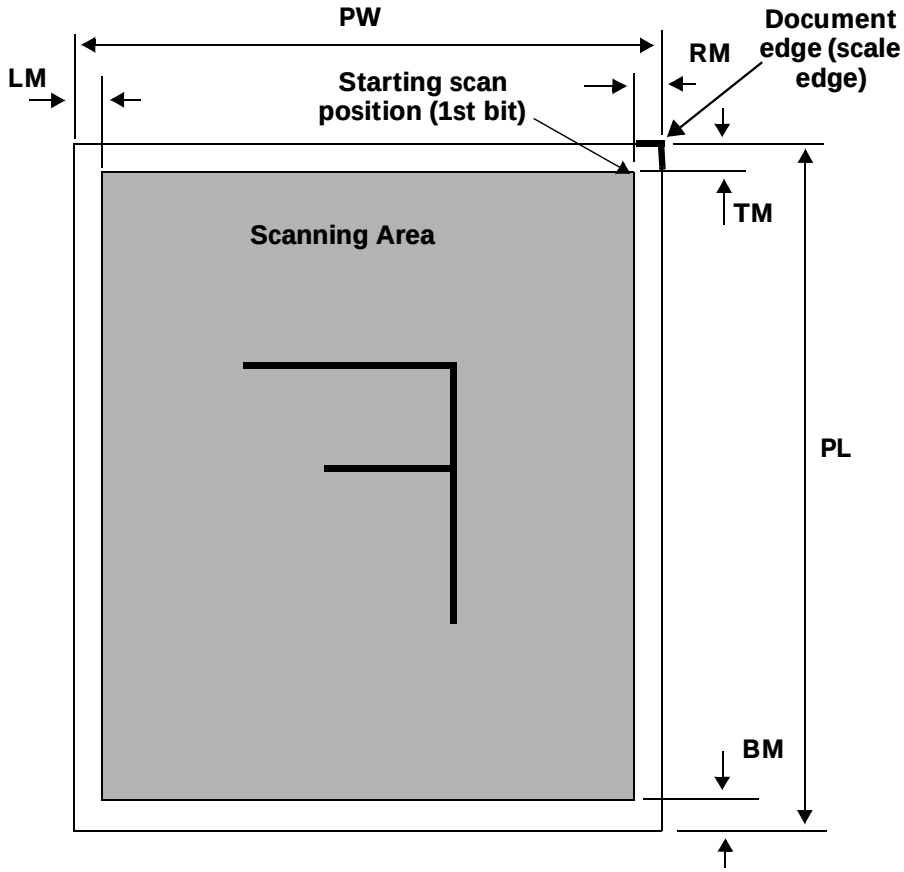



**Figure 1-1. Scan Area**

**Table 1-2. Scan Area**

| Document size | PW (width) | PL (length) | LM (left) | RM (right) | TM (top) | BM (bottom) |
|---|---|---|---|---|---|---|
| A4 | 210mm | 297mm | at least 3mm | at least 3mm | at least 3mm | at least 3mm |
| Letter | 216mm | 279mm | at least 3mm | at least 3mm | at least 3mm | at least 3mm |

## 1.2.3 Print area

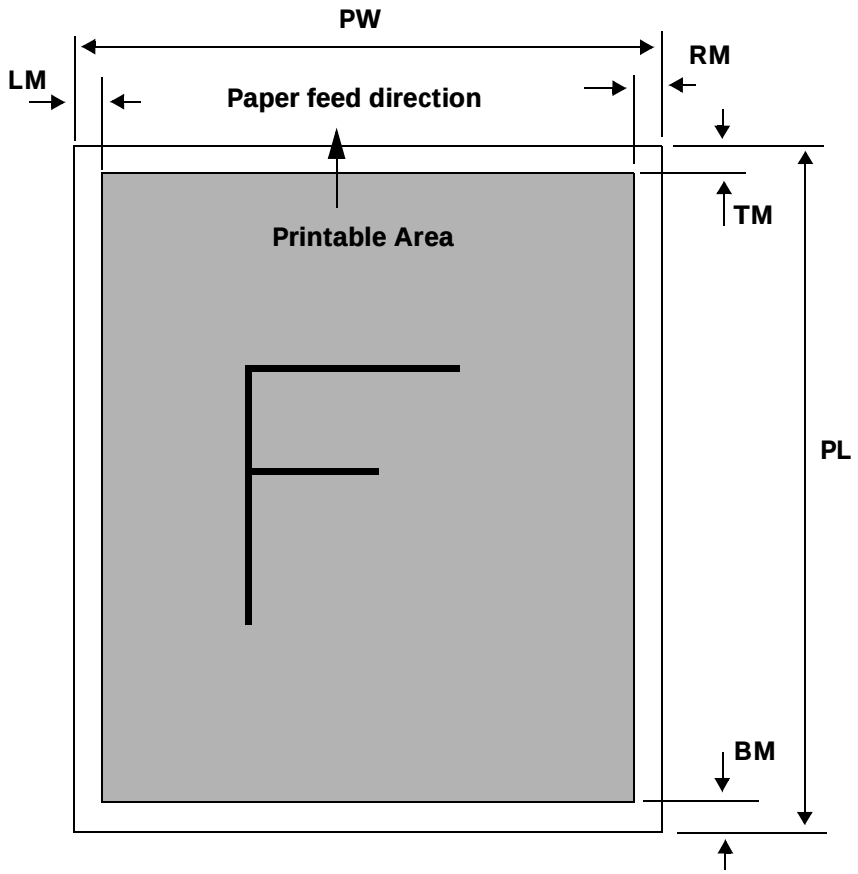



**Figure 1-2. Print Area**

**Table 1-3. Print Area**

| Document | PW | PL | LM | RM | TM | BM |
|---|---|---|---|---|---|---|
| A4 | 210mm | 297mm | at least 3mm | at least 3mm | at least 3mm | at least 3mm |
| Letter | 216mm | 279mm | at least 3mm | at least 3mm | at least 3mm | at least 3mm |
| B5 | 182mm | 257mm | at least 3mm | at least 3mm | at least 3mm | at least 3mm |
| Legal | 216mm | 356mm | at least 3mm | at least 3mm | at least 3mm | at least 3mm |

## 1.2.4 Printing

- ☐ Print method — Drop On Demand ink jet
- ☐ Nozzle configuration — monochrome 144 nozzles (48 x 3 staggered)<br>color 48 nozzles each (cyan, magenta, yellow)
- ☐ Print direction — Bi-direction with logic seeking
- ☐ Print speed & printable columns

**Table 1-4. Character code**

| Character pitch | Printable columns | LQ speed |
|---|---|---|
| 10 CPI (Pica) | 80 | 200 CPS |

**Table 1-5. Raster Graphics mode**

| Horizontal resolution | Printable area | Available dots | CR speed |
|---|---|---|---|
| 180 dpi | 8.26 inch | 1488 | 20 IPS |
| 360 dpi | 8.26 inch | 2976 | 20 IPS |
| 720 dpi | 8.26 inch | 5952 | 20 IPS |

## 1.2.5 Input data buffer

64Kbytes

## 1.2.6 Control codes

ESC/P Raster

Epson Remote Command

## 1.2.7 Paper feed

| | | | |
|---|---|---|---|
| 1. | Feeding method | Friction feed with ASF | |
| 2. | Line spacing | 1/6 inch or programmable at 1/360 | |
| 3. | Paper path | cut-sheet | ASF (top enter, front out) |
| 4. | Feed speed | 2.36 inch/sec.<br>4.5 inch/sec. | normal/ continuous<br>fast/continuous |

## 1.2.8 Paper

☐ Cut-sheets

size: A4 210(W) x 297mm (L) (8.3 x 11.7”)
Letter 216 x 279mm (8.5 x 11.0”)
B5 182 x 257mm (7.2 x 10.1”)
Legal 216 x 356mm (8.5 x 14.0”)
Statement 139.7 x 215.9mm (5.5 x 8.5”)
Executive 184.2 x 266.7mm (7.25 x 10.5”)
Photo paper 101.6 x 152.4mm (4 x 6”)

thickness: 0.08~0.11mm (0.003~0.004”)

weight: 64g/m$^2$~90g/m$^2$ (17~24lb.)

quality: Exclusive paper, bond paper, PPC

☐ OHP sheets, Glossy paper

size: A4 210(W) x 297mm (L) (8.3 x 11.7”)
Letter 216 x 279mm (8.5 x 11.0”)

thickness: 0.075~0.085mm (0.003~0.0033”)

***NOTE:*** *Transparency printing is only supported at normal temperature.*

☐ Envelopes

size: No.10 241(W) x 104.8mm (H) (9.5 x 4.125”)
DL 220 x 110mm (8.7 x 4.3”)
C6 162 x 114mm (6.4 x *4.5*”)

thickness: 0.16~0.52mm (0.006~0.02”)

weight: 45g/m$^2$~75g/m$^2$ (12~20lb.)

quality: Plain paper, bond paper, Air mail

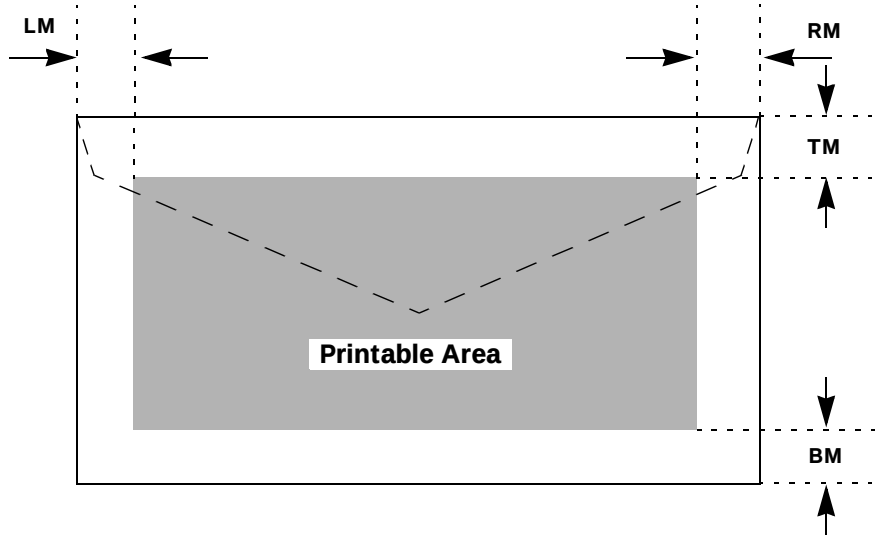



**Figure 1-3. Printable Area for Envelopes**

Envelope printing is only supported at normal temperature.
Load long edge first.

**Table 1-6. Envelope Margin**

| Size | Left Margin (min.) | Right Margin (min.) | Top Margin (min.) | Bottom Margin (min.) |
|---|---|---|---|---|
| #10 | 3 mm (0.12”) | 28 mm (1.10”) | 3 mm (0.12”) | 14 mm (0.55”) |
| DL | 3 mm (0.12”) | 7 mm (0.28”) | 3 mm (0.12”) | 14 mm (0.55”) |
| C6 | 3 mm (0.12”) | 3 mm (0.12”) | 3 mm (0.12”) | 14 mm (0.55”) |

☐ Index cards

size: A6 index 105(W) x 148mm (L) (4.1 x 5.8”)
A5 index 148 x 210mm (5.8 x 8.3”)
5x8” index 127 x 203mm (5.0 x 8.0”)
10x8” index 254 x 203mm (10.0 x 8.0”)

thickness: less than 0.23mm (0.0091”)

## 1.2.9 Ink

1. Ink cartridge (black)

| | |
|---|---|
| Type: | Exclusive cartridge |
| Color: | Black |
| Print capacity: | 900 pages/A4 (ISO/IEC 10561 Letter pattern 360dpi |
| Ink life: | Two years from production date |
| Storage temperature: | -20~40°C (storage, less than a month at 40°C)<br>-30~40°C (packing storage, less than month at 40°C)<br>-30~60°C (transit, within 120 hours at 60°C and within a month at 40°) |
| Dimensions: | 27.8 (W) x 52.7 (D) x 38.5mm (H) |

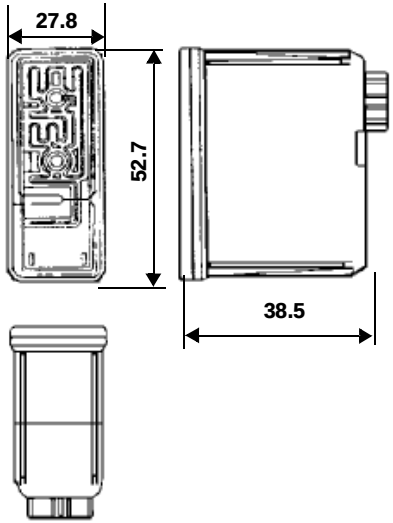



**Figure 1-4. Black Ink Cartridge**

2. Ink cartridge (color)

| | |
|---|---|
| Type: | Exclusive cartridge |
| Colors: | Magenta, cyan, and yellow |
| Print capacity: | 300 pages/A4 (360 dpi, 5% duty each color) |
| Ink life: | Two years from production date |
| Storage temperature: | -20~40°C (storage, less than a month at 40°C)<br>-30~40°C (packing storage, less than month at 40°C)<br>-30~60°C (transit, within 120 hours at 60°C and within a month at 40°) |
| Dimensions: | 42.9 (W) x 52.7 (D) x 38.5mm (H) |

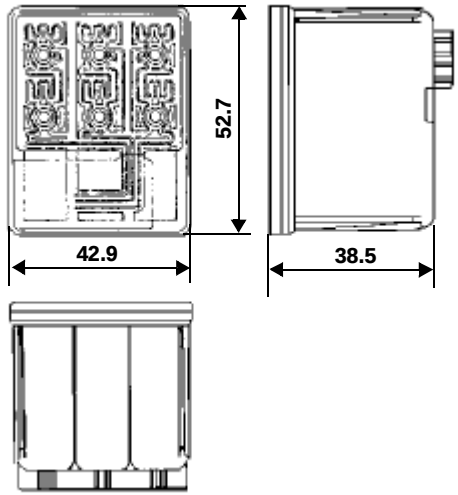



**Figure 1-5. Color Ink Cartridge**

***NOTE:*** *Ink cartridges are consumable products and cannot by any means be refilled.*
*Do not use cartridges that have passed their expiration date.*
*Ink will freeze at less than -4°C but can be used after thawing for three hours at room temperature.*

## 1.3 Scanner

| | |
|---|---|
| Product type | Flat-bed color image scanner |
| Sub scan method | Movement of scan head |
| Photoelectric device | Color CCD line sensor |
| Max. scan area | 8.5 x 11.7" (216 x 297mm) |
| Max. effective pixels | 5100 x 7020 pixels (600dpi) |
| Scan resolution | main = 600dpi<br>sub = 1200dpi |
| Output resolution | 50~4800 dpi (1dpi increments)<br>(4800 dpi at 200% reaches the limitation of maximum 16,368 pixels at 9600 dpi for main scan) |
| Scan speed (600dpi, Draft mode) | Color = 8.1msec/line<br>Monochrome (bi-level) = 2.7msec/line |
| Color separation | By the CCD color filter |
| Command level | ESC/I - B7 |
| Zoom | 50~200% (1% increments) |
| Pixel depth | 8 bits/pixel/color (input 12 bits/pixel/color, output 8 bits/pixel/color) |
| Gamma correction | CRT two levels (A,B)<br>PRINTER three levels (A,B,C)<br>User defined = one level |
| Color correction | Impact-dot printer<br>Thermal printer<br>Ink-jet printer<br>CRT display<br>User defined |
| Brightness | Seven levels |
| Line art | Fixed threshold<br>TET |
| Digital halftoning | AAS<br>Error diffusion three modes (A,B,C) |
| (Bi-level, Quad-level) | Dither (resident) four modes (A,B,C,D)<br>Dither (user defined) two modes (A,B) |
| Interface | USB and IEEE1284.4 |
| Light source | White cold cathode fluorescent lamp |
| Option | TPU (for GT-7000)<br>ADF (for GT-7000) |

# 1.4 Common

## 1.4.1 Electrical specifications

| | |
|---|---|
| Rated voltage | AC 100~120V<br>AC 220~240V |
| Input voltage | AC 100~120V ±10%<br>AC 220~240V ±10% |
| Rated current | 0.7A (AC 100~120V ±10% model)<br>0.4A (AC 220~240V ±10% model) |
| Rated frequency range | 50~60 Hz |
| Input frequency range | 49.5~60.5 Hz |
| Power consumption | Approx. 32W during Local-copy printing |
| Insulation resistance | 10MΩ at 500V DC<br>(between AC line and chassis) |
| Dialectic strength | AC 1.5kV, 1min<br>(between AC line and chassis) |

## 1.4.2 Safety, EMC

| | |
|---|---|
| Safety | UL1950 (UL)<br>CSA C22.2 No. 950 (CSA)<br>EN60950 (VDE)<br>IEC950 (ROSTEST, PSB) |
| EMC | FCC Part15 Subpart B Class B<br>CSA C108.8 Class B<br>AS/NZS3548 Class B<br>CISPR Pub22 Class B<br>CNS13438 Class B |

CE Marking

| | |
|---|---|
| Low voltage directive 73/23/EEC | EN60950 |
| EMC Directive 89/336/EEC | EN55022 Class B<br>EN61000-3-2<br>EN61000-3-3<br>EN50082-1<br>IEC 801-2/801-3/801-4 |

## 1.4.3 Environmental conditions

| | |
|---|---|
| Temperature | 10~35°C (operating, see figure below)<br>-20~60°C (non-operating, in packaging)<br>One month at 40°C<br>120 hours at 60°C |
| Humidity | 20~80% RH (operating, without condensation, see figure below)<br>5~85% RH (non-operating, in packaging without condensation) |
| Resistance to shock | 1 G, within one ms (operating)<br>2 G, within two ms (non-operating, in packaging) |
| Resistance to vibration | 0.15G (operating)<br>0.50G (non-operating, in packaging) |

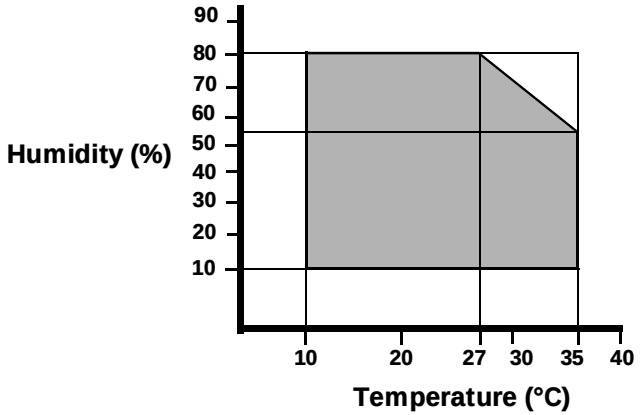



**Figure 1-6. Humidity and Temperature**

## 1.4.4 Resistance to electric noise

| | |
|---|---|
| Static electricity | panel - 10kV<br>metal - 7kV/150pF, 150 Ω |

## 1.4.5 Reliability

| | |
|---|---|
| Total print volume | 60,000 pages (A4, Letter) |
| Printhead life | 4 billion dots/nozzle |
| Scan head | MCBF 30,000 cycles |

## 1.4.6 Acoustic noise

| | |
|---|---|
| Level | Approx. 46 dB (local copy with no ADF)<br>Approx. 50 dB (local copy with ADF)<br>(According to ISO7779) |

# 1.5 Interfaces

This section is divided into printer and scanner interface specifications. See the following section for printer interface details or see “Scanner interfaces” on pag e22 for scanner interface details.

## 1.5.1 Printer Interface

### PARALLEL

BUSY signal is set high before setting either -ERROR low or PE high, and held high until all these signals return to their inactive state.

BUSY signal is at high level in the following cases:

- During data entry (see data transmission timing)
- When input data buffer is full
- During -INIT signal is at low level or during hardware initialization
- During printer error (see -ERROR signal)
- When the parallel interface is not selected

ERROR signal is at low level when the printer is in one of the following states:

- Printer hardware error (fatal error)
- Paper-out error
- Paper-jam error
- Ink-out error

PE signal is at high level during paper-out error.

1. Specification

| | |
|---|---|
| Transmission mode | 8 bit parallel, IEEE-1284 compatibility/nibble mode |
| Synchronization | Refer to the IEEE-1284 specification |
| Handshaking | Refer to the IEEE-1284 specification |
| Packet | Refer to the IEEE-1284 Standard for Data Delivery and Logical Channels for IEEE Std. 1284.4 Interface (Draft D1.50)<br>Refer to the IEEE-1284 specification |
| Signal level | TTL compatible level (IEEE-1284 Level 1 device) |
| Data trans. timing | Refer to the IEEE-1284 specification |

2. Connector pin assignment and signals
   Refer to the IEEE-1284 specification
3. Data transmission timing
   Refer to the IEEE-1284 specification
4. Extensibility Request:

   The printer responds affirmatively when the extensibility request values are 00H or 04H, which mean

   - 00H Request nibble mode reverse channel transfer
   - 04H Request Device ID;
     Return data using nibble mode reverse channel transfer

Device ID:

The printer sends the following device ID string when requested.

*IEEE 1284.4 is enabled,*

*[00H][5EH]*
*MFG:EPSON;*
*CMD:ESCPL2,BDC,D4,SPC;*
*MDL:Stylus[SP]Scan[SP]2500;*
*CLS:PRINTER*
*DES:EPSON[SP]Stylus[SP]Scan[SP]2500;*

*Note: (1)[00H] denotes a hexadecimal value of zero*
*(2)MDL value depends on the EEPROM setting.*

## USB

Standard :based on
"Universal Serial Bus Specifications Revision 1.0"
"Universal Serial Bus Device Class Definition for Printing Devices Version 1.0"

Bit rate :12Mbps (Full speed device)

Data encoding :NRZI

Adaptable connector :USB series B

Suggested cable length :2 meters

**Table 1-7. USB Configuration**

| Pin no. | Signal name | In/Out | Description |
|---|---|---|---|
| 1 | VCC | - | Cable power, max. power consumption is 100mA |
| 2 | -Data | bi-directional | data |
| 3 | +Data | bi-directional | data, pull up to +3.3V via 1.5KΩ resistor |
| 4 | Ground | - | Cable ground |

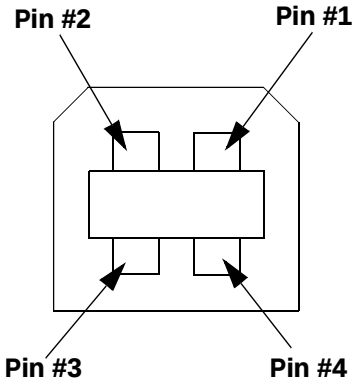



**Figure 1-7. USB Pin Configuration**

## PREVENTING DATA TRANSFER TIME-OUT OF HOSTS

Generally, hosts abandon data transfer to peripherals when a peripheral is continuously in the busy state for dozens of seconds. To prevent hosts from entering this kind of time-out period, the printer slows down the data reception rate to around several bytes per minute, even if the printer is in the busy state. This slowdown starts when the remaining open buffer area decreases to several hundred bytes. The Stylus Scan enters a continuous busy state if the input buffer becomes full.

## INTERFACE SELECTION

The Stylus Scan has two built-in interfaces; the USB and parallel interfaces. The interface in use is selected automatically.

- Automatic selection

When the Stylus Scan is turned on, it initializes and then goes into an idle state. During this idle period the printer scans the interfaces for incoming data. The interface that receives data first is selected.

When the host stops transferring data and the printer is in the stand-by state for a certain amount of time, the printer returns to the idle state. As long as the host sends data or the printer interface is in the busy state, the interface selection does not change.

- Interface status and selection

When the parallel interface is not selected, the interface goes into the busy state. When the printer initializes or returns to the idle state, the parallel interface goes into the ready state. Be aware that an interrupt signal such as the -INIT signal only takes affect on the parallel interface when the parallel interface is selected.

### IEEE1284.4 PROTOCOL

The packet protocol described by IEEE1284.4 standard allows a device to carry on multiple exchanges or conversations which contain data and/or control information with another device at the same time across a single point-to-point link. The protocol is not, however, a device control language. It does provide basic transport-level flow control and multiplexing services. The multiplexed logical channels are independent of each other and blocking of one has no effect on the others. The protocol operates over IEEE1284.

- ☐ Automatic Selection
  An initial state is compatible interface and starts IEEE1284.4 communication when magic strings (1284.4 synchronous commands) are received.
- ☐ On
  An initial state is IEEE1284.4 communication and data that received it by the time it is able to take synchronization by magic string (1284.4 synchronous commands) is discarded.
- ☐ Off
  An initial state is compatible interface and never starts IEEE1284.4 communication even if magic strings (1284.4 synchronous commands) are received.

## 1.5.2 Scanner interfaces

### PARALLEL

1. Specification

| | |
|---|---|
| Transmission mode | 8 bit parallel, IEEE-1284 compatibility/nibble mode |
| Synchronization | Refer to the IEEE-1284 specification |
| Handshaking | Refer to the IEEE-1284 specification |
| Packet | Refer to the IEEE-1284 Standard for Data Delivery and Logical Channels for IEEE Std. 1284.4 Interface (Draft D1.50)<br>Refer to the IEEE-1284 specification |
| Signal level | TTL compatible level (IEEE-1284 Level 1 device) |
| Data trans. timing | Refer to the IEEE-1284 specification |

2. Connector pin assignment and signals
   Refer to the IEEE-1284 specification
3. Data transmission timing
   Refer to the IEEE-1284 specification

## USB

Any items not included in this manual and/or the user's guide shall be in compliance with the Universal Serial Bus Specification Revision 1.0

☐ Configuration - the scanner supports the following configurations

**Table 1-8. Scanner Configuration for USB**

| Element | Description |
|---|---|
| Device | Full Speed Mode (12Mbit/s)<br>Class: Vendor-specific<br>Subclass: Vendor-specific<br>Protocol: Vendor-specific<br>Vendor ID: 0x04B8 (Seiko Epson Corp.)<br>Product ID: 0x0106<br>Number of possible configurations: 1 |
| Configuration | Number of interfaces supported by this configuration: 1<br>Characteristics: Self-powered (Remote wake-up feature not supported)<br>Max. power consumption from VBUS: 2mA (5V) |
| Interface | No alternate setting<br>Number of endpoints used by this interface (excluding endpoint 0):2<br>Class: Vendor specific<br>Subclass: Vendor specific<br>Protocol: Vendor specific |
| Endpoint | Bulk IN transfer<br>Max. data transfer size: 64 bytes |
| | Bulk OUT transfer<br>Max. data transfer size: 64 bytes |
| String Descriptor | Language ID: English, US<br>1: iManufacturer "EPSON"<br>2: iProduct "Scanner Stylus Scan 2500" |

☐ Requests

The scanner must support almost all standard device requests. The scanner does not support vendor specific requests.

# 1.6 Control Panel

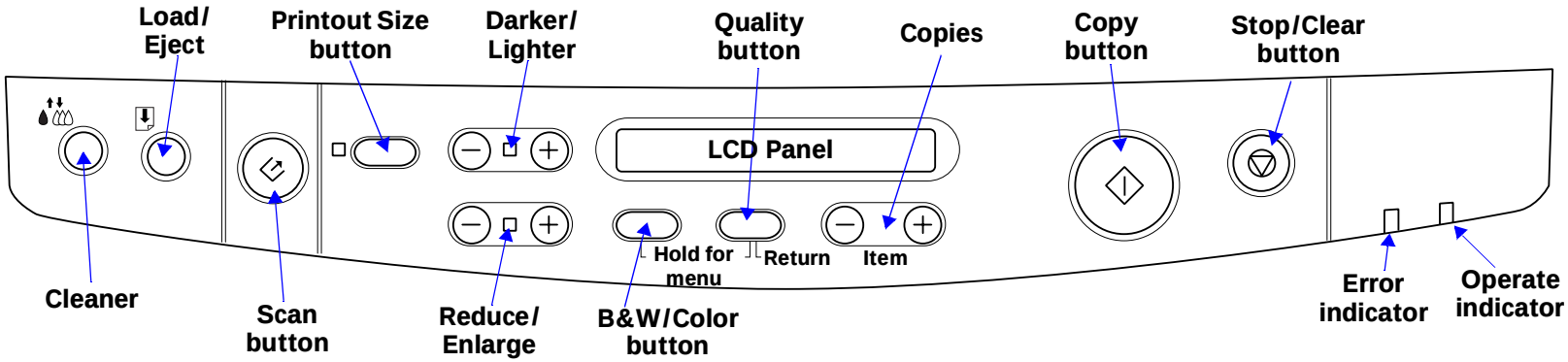



**Figure 1-8. Control Panel**

## 1.6.1 Buttons

**Table 1-9. Button functions**

| Button | Function |
|---|---|
| Load/Eject (pushed within two* seconds) | • Loads or ejects paper<br>• If the carriage is at the ink cartridge installation position, returns the carriage back to the home position. |
| Load/Eject (pushed for two* seconds) | • Starts the ink cartridge replacement sequence (not available during printing.<br>Shifts the carriage to the ink cartridge replacement position. |
| Cleaning (pushed for two* seconds) | • Starts the printhead cleaning cycle.<br>• If the printer is in the “Ink Low” or “Ink Out” or “No Ink Cartridge” condition, starts the ink cartridge replacement sequence. |
| Cleaning (pushed within two* seconds) | • If the carriage is at the ink cartridge replacement position, returns the carriage from the ink cartridge replacement position to the home position. |

* The user’s guide states three seconds.

**Table 1-10. Power-on functions**

| Button | Function |
|---|---|
| Load/Eject | Prints a status sheet that includes firmware version, ink counter, and nozzle check patterns. |
| Load/Eject + Cleaning | Enters the special-settings mode (see table below), which remains active for three seconds. If neither the Load/Eject nor Cleaning button is pushed in that three seconds, normal initialization begins. |

**Table 1-11. Special settings mode**

| Button | Function |
|---|---|
| Load/Eject | Resets the real-time counter (power-off time) in EEPROM |
| Cleaning (hold for ten seconds) | Resets the waste ink overflow counter |

## COPY BUTTON

Before performing a local-copy operation, you should understand how the LCD and control panel buttons work. The LCD displays:

- Copy status
- Copy settings
- Stylus Scan error messages and maintenance status
- Miscellaneous settings not directly related to copying

1. Copy status

   While waiting for a copy job, the current copy settings are displayed.
   Example: (default)

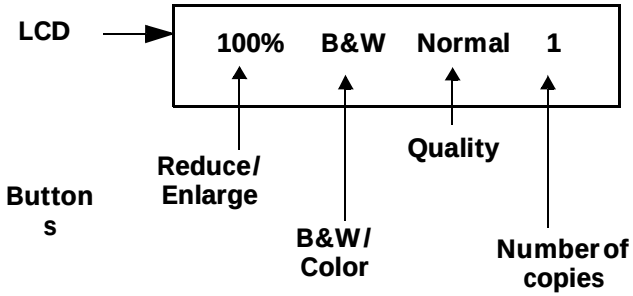



**Figure 1-9. LCD and Button Relationship**

2. Copy settings

   Allows you to make the following copy settings.

   - Quality
   - Reduce/Enlarge
   - Paper size
   - Brightness
   - Number of copies

3. Status

   Displays the current Stylus Scan condition.

   Example:

   Scanner lamp is warming up

   **Warm up**

4. Miscellaneous settings

   Allows users to print or change the following

   Demo pattern

   Status sheet

   Bottom margin

   Paper size category (metric or US)

   Language code

   Set factory default

**Table 1-12. Copy button functions**

| Button | Function | Notes |
|---|---|---|
| Operate | • Sets Local Copy Mode as the default; same as printer reset. | |
| Stop/Clear | • Stops the current copy job and ejects the paper during copying.<br>• Clears number of copies setting (returns to "1")<br>• Clears settings and returns settings to their default values. | |
| Copy | • Starts copying (default = ***B & W 100% Normal 1)*** | |
| B&W/Color | • Selects Color copy or Black & white copy | |

**Table 1-12. Copy button functions (cont.)**

| Button | Function | Notes |
|---|---|---|
| Quality | Sets copy quality<br>• B&W<br>**Normal**<br>Fine<br>• Color<br>**Normal**<br>Fine<br>Photo<br>Note: When Photo is selected, the LCD displays "Load Photo Paper". | |
| Multiple copies | • B&W<br>**1**-20<br>• Color<br>**1**-20<br>Increments by "1", and increment speed increases if held for more than one second. | Resets to 1 if Stop/ Clear button is pressed. |
| Enlarge/ Reduce | • Selects reduce or enlarge<br>• Default = 100%<br>• First press = LED shows current status<br>• Multiple presses (within 5 sec.s) = moves up one setting each time<br>Example<br>First time = Enlarge/Reduce LED only (100%) activated (default)<br>Second or more time = cycles through the following.<br>93% > 80% > 70% > 50%<br>200% > 141% > 120% | |
| Printout Size | Sets the size of the printed paper during Local Copy mode;<br>A size area = **A4**/B5/A6<br>Letter size area = **Letter**/Half Letter/5x8" | |
| Brightness | Sets the brightness level from -2>**0**>+2 in increments of "1". | |

**Table 1-13. Settings Menu**

| Button | Function | LCD |
|---|---|---|
| Quality B&W/ Color | Change modes Copy<-> Settings Menu | Hold Quality + B&W buttons for three seconds<br>**Menu Mode**<br>After two seconds<br>**BottomMargin:14/3mm** |
| Copies +/- | Change menu in Settings Menu mode | Cycles through the menus below:<br>**BottomMargin:14/3mm**<br>**PaperSize: Metric/US**<br>**Lang: Eng Ger Fr Ital Span Port**<br>**Set Factory Default**<br>**Status Sheet Print** |
| Copy | Executes menu or selects item | Lang: **Eng** Ger Fr Ital Span Port<br>Press copy to change to next<br>Lang: Eng **Ger** Fr Ital Span Port |

## 1.6.2 Indicators and LCD Display

**Table 1-14. LCD display and LED indicators**

| Status | Scanner Printer Copy | Indicators | | Display message |
|---|---|---|---|---|
| | | Operate | Error | |
| Scanner fatal error | S | - | On | Scanner Error |
| Printer fatal error | P | - | On | Printer Error |
| Maintenance request (waste ink pads full) | P | - | On | Call Service |
| ADF paper jam | S | - | On | ADF Jam |
| Printer paper jam | P | - | Flashing | Printer Jam |
| ADF cover open | S | - | Flashing | ADF Cover Open |
| Printer paper out | P | - | Flashing | Printer Paper Out |
| Black Ink end/ No ink cartridge | P | - | Flashing | Black Ink Out |
| Color Ink end/ No ink cartridge | P | - | Flashing | Color Ink Out |
| Ink cartridge change mode | P | Flashing | - | Replace Cartridge |
| Maintenance cover open | S | Flashing | - | Maint. Cover Open |
| Black ink level low | P | - | - | Black Ink Low (displays alternately with regular message) |

**Table 1-14. LCD display and LED indicators (cont.)**

| Status | Scanner Printer Copy | Indicators | | Display message |
|---|---|---|---|---|
| | | Operate | Error | |
| Color Ink level low | P | - | - | Color Ink Low (displays alternately with regular message) |
| Scanner lamp warming up | S | Flashing | - | Warm Up |
| Ink charging | P | Flashing | - | Warm Up |
| Scanning | S | Flashing | - | Scanning [xxx] (xxx=I/F) |
| Printing | P | Flashing | - | Printing [xxx] (xxx=I/F) |
| Copying | C | Flashing | - | Following messages alternate:<br>A message = (current copy settings)<br>B message = Now Copying x/y (x=current document number, y = total number of copies) |
| Power on | (all) | On | - | Power on (for two seconds and then changes to Copy Mode (default)) |
| Initialize EEPROM and reset timer IC | P | - | - | EEPROM Reset |

This order of items in this table is from high to low priority.

"-" = no change/does not matter

## 1.6.3 Initialization

### PRINTER INITIALIZATION

There are three initialization methods.

1. Power-on (hardware) initialization

   The printer initializes when turned on or when it recognizes the cold-reset command (remote RS command).
   When the printer initializes, the following actions are performed.

   - Initialize printer mechanism
   - Clear input data buffer
   - Clear print buffer
   - Set default values

2. Operator initialization

   The printer initializes when turned on within ten seconds of being turned off, or when the printer recognizes the -INIT signal (negative pulse) from the parallel interface.
   When the printer initializes, the following actions are performed.

   - Cap the printhead
   - Eject paper
   - Clear input data buffer
   - Clear print buffer
   - Set default values

3. Software initialization

   The ESC@ command also initializes the printer.
   When the printer initializes, the following actions are performed.

   - Clear print buffer
   - Set default values

**Table 1-15. Initialization**

| Operation | Operating | Standby | Controller process | Scanner process | Printer process | Restart |
|---|---|---|---|---|---|---|
| Power on | Valid | Valid | Set the local copy setting to default | H/W initialization | H/W initialization | - |
| Panel Reset | Valid | Valid | | Controller initialization | Panel initialization | - |
| Initialize by command | Valid | Valid | | S/W initialization | S/W initialization | - |
| STOP | Valid | - | • Stop copying<br>• Setting remains as is | Cancel | Eject paper | Copy button |
| CLEAR | - | Valid | • Setting mode: default<br>• Copy mode: Multi-copies volume 1 | | | |

## SCANNER INITIALIZATION

There are three initialization methods.

1. Hardware initialization

   The scanner initializes when turned on.
   When the scanner initializes, the following actions are performed.

   - Initialize scanner mechanism
   - Clear input/output data buffer
   - Set default values

2. Operator initialization

   The scanner initializes when it recognizes the -INIT signal (negative pulse) from the parallel interface.
   When the scanner initializes, the following actions are performed.

   - Clear input/output data buffer
   - Set default values

3. Software initialization

   The ESC@ command also initializes the scanner.
   When the scanner initializes, the following actions are performed.

   - Clear input/output data buffer
   - Set default values

# 1.7 Settings Menu

Enter the settings menu mode by holding down the Quality and B&W/Color buttons. Settings are saved when the power is turned off.

**Table 1-16. Settings Menu**

| Button | Function | LCD |
|---|---|---|
| Quality<br>B&W/<br>Color | Change modes<br>Copy<-> Settings Menu | Hold Quality + B&W buttons for three seconds<br>**Menu Mode**<br>After two seconds<br>**BottomMargin:14/3mm** |
| Copies<br>+/- | Change menu in<br>Settings Menu mode | Cycles through the menus below:<br>**BottomMargin:14/3mm**<br>**PaperSize:Metric/US**<br>**Lang:Eng Ger Fr Ital Span Port**<br>**Set Factory Default**<br>**Status Sheet Print** |
| Copy | Executes menu or<br>selects item | Lang: **Eng** Ger Fr Ital Span Port<br>Press copy to change to next<br>Lang: **Ger** Fr Ital Span Port Eng |

## MENUS

1. Bottom Margin
   Determines the default bottom margin of 14mm or 3mm.
2. Paper Size category
   Determines which paper size category is enabled; metric or US
   Metric = A4/B5/A6
   US = Letter/Half Letter/5x8”
3. Language
   Determines which language is used to display LCD messages;
   English/German/French/Italian/Spanish/Portuguese
4. Set Factory Default
   Determines parameters for factory default settings.
   Factory default settings:
   Copy mode = Refer to “Buttons” on pag e24
   Settings Menu mode = 14mm bottom margin
   The Paper Size and Language parameters are saved as defaults when power is turned off.
5. Status sheet
   Prints the following settings:
   Bottom margin
   Paper size category
   Language

# 1.8 Stylus Scan Errors

## PRINTER-SPECIFIC ERRORS

**Table 1-17. Printer-SPECIFIC errors**

| Error | Cause | Solution |
|---|---|---|
| Ink out | When one or more ink cartridges are almost empty, the printer enters the low-ink state and continues printing. When the cartridge is completely empty, the printer indicates an ink-out error and stops printing. | Install a new ink cartridge. |
| Paper out | If the printer fails to properly load paper, it indicates a paper-out error. | Load paper and press the Load/Eject button. |
| Paper jam | If the printer fails to properly eject paper, it indicates a paper jam. | Press the Load/Eject button. If this does not clear the error, remove the paper by hand. |
| No ink cartridge | If the printer detects that one of the ink cartridges is not installed, it indicates a no-ink-cartridge error. | Install a new ink cartridge. |
| Call Service | When the total amount of waste ink reaches the limit, the printer indicates a maintenance request and stops printing. | Replace the waste ink pads and reset the waste ink counter with the adjustment program. See Chapter 5 for details. |
| Fatal error | A carriage control or CG access error has occurred. | Turn off the Stylus Scan and turn it back on. If the error does not clear, service. |

***NOTE:*** *Do not re-install used ink cartridges. Doing so confuses the ink-level detection function and may cause a serious problem in the printhead.*

### SCANNER-SPECIFIC ERRORS

**Table 1-18. Scanner-SPECIFIC errors**

| Error | Cause | Solution |
|---|---|---|
| Fatal error | • The lamp is broken.<br>• Stylus Scan turned on before the transportation screw was removed.<br>• System breakdown. | Turn off the Stylus Scan and turn it back on. If the error does not clear, service.<br>(Disposition)<br>Turn off the lamp and stop operation. Set bit 7 of the status byte. |
| ADF paper jam | ADF fails to eject the document. | After removing the document, turn the Stylus Scan off and back on, or send the ESC @ command.<br>Parallel I/F init: active pulse<br>(Disposition)<br>Turn off the lamp and stop operation. Set bit 7 of the status byte. |
| Command error | Unidentified command detected.<br>(Disposition)<br>The scanner sent a NACK signal and is waiting for the next command. If an incorrect command or parameter is received, it is disregarded and the previous value is maintained. | Send a correct command to clear the error. |
| ADF cover open | ADF cover open | Close the cover. |
| Maintenance cover open | Maintenance cover open | Close the cover. |

# 1.9 Options

The optional Auto Document Feeder and optional Transparency Unit designed for use with the GT-7000 scanner may also be used with the EPSON Stylus Scan 2500 under the following restrictions.

## 1.9.1 Local Copy

### ADF

If a document is loaded in the ADF tray, the Stylus Scan loads and scans that document.
If a document remains on the document glass, a copy is not produced normally.
Even if multiple copies are selected, the Stylus Scan ignores this setting and produces only one copy per document sheet.

### TPU

The TPU cannot be used in Local Copy mode. The Stylus Scan ignores the TPU in this mode.

## 1.9.2 Scanning

### ADF

Same as the GT-7000.

### TPU

If the Stylus Scan receives transparency scanning commands, it will turn on the TPU lamp and scan the transparency after the warm-up period. The Stylus Scan ignores the ADF in this mode. After scanning, the TPU lamp remains on until the TPU is turned off or until the Stylus Scan receives reflective document scanning commands.

If the Stylus Scan receives reflective document scanning commands, it will scan the document normally.

# 1.10 Physical Characteristics

## 1.10.1 Dimensions

212 x 517 x 413mm (HWD)

(not including, extended parts, rubber parts, and the ASF projection)

## 1.10.2 Weight

Approximately 12Kg

CHAPTER

# 2

# OPERATING PRINCIPLES

## 2.1 General

The main components of the EPSON Stylus Scan 2500 are the printer mechanism, scanner mechanism, and the following circuit boards

| | |
|---|---|
| Main: | B102 Main Board |
| Power Supply: | B102 PSB/PSE Board |
| Panel: | B102 PNL Board |

## 2.2 Printer Mechanism Operation

Like previous EPSON Ink Jet printers such as the Stylus Color 740, the printer mechanism of the EPSON Stylus Scan 2500 does not have an exclusive mechanism to switch from paper feeding to pumping and back. Instead, this control is done by the rotational direction of the paper feed/ pump motor and also depends on the position of the carriage.

The printhead combines the black and CMY heads in one unit. The following indicate the nozzle configurations of these 3 models.

- ☐ Black Nozzles: 144 nozzles (120 dpi x 3 rows in staggered)
- ☐ CMY Nozzles: 48 nozzles/colors (120 dpi x 1 row)

### Motor Types and Corresponding Functions

| Motor | Type | Function | For details see |
|---|---|---|---|
| CR Motor | Stepping | Used to drive the carriage. | page 38 |
| PF Motor | Stepping | • Drives the ASF to feed paper into paper path<br>• Drives paper feed rollers at variable speeds<br>• Drives the CR Lock lever (as described on page 44)<br>• Drives pump unit to absorb ink | page 40 |

Figure 2-1 in the in the right column shows the outline of the printer mechanism.

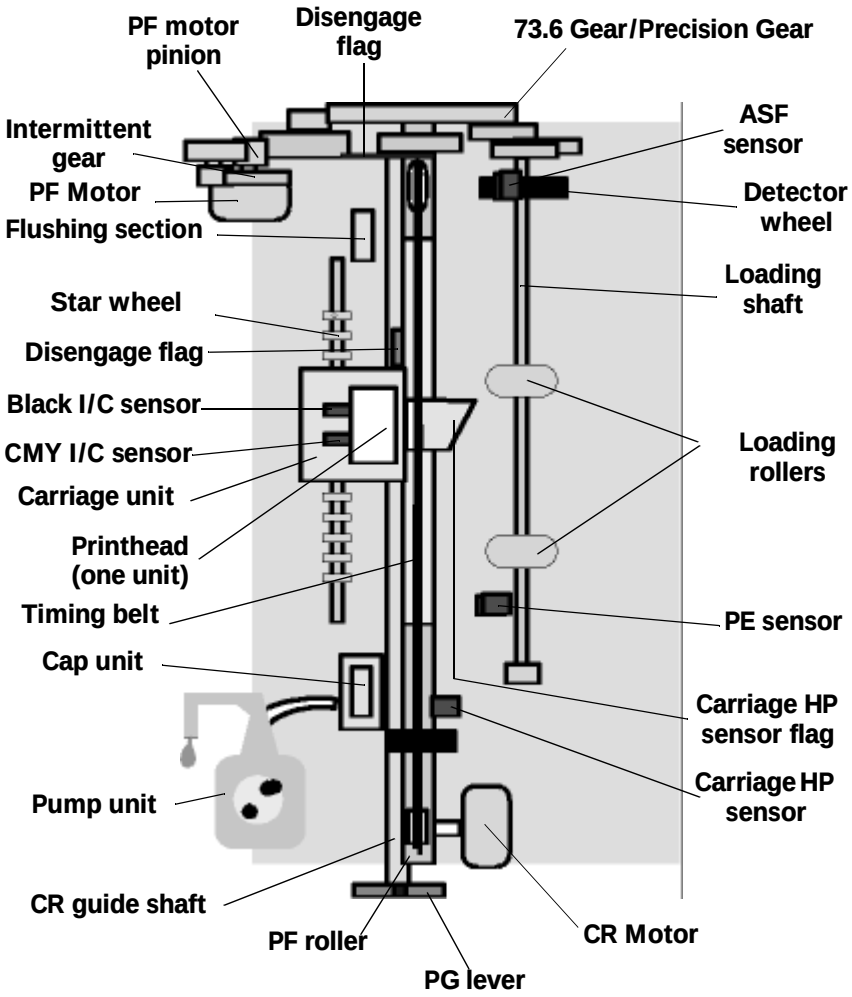



**Figure 2-1. Printer Mechanism Block Diagram**

## 2.2.1 Printing Mechanism

The basic principles of the printhead are the same as previous models; Drop-On-Demand type MACH head method.

You need to manually input the drive-voltage code (printed on top of the printhead) for the multi-layer piezo electric element. Input this value every time you replace the printhead, MAIN board, or printer mechanism.

The main parts of the printhead and carriage are described below.

- PZT
  PZT is an abbreviation of Piezo Electric Element. The print signal is sent from the MAIN board to the PZT via the driver circuit on the printhead unit. Then, the appropriate PZT squeezes the cavity, forcing the ink stored in the cavity out through the nozzle. This process is described in more detail on the next page.
- Ink cavity
  Ink flows from the ink cartridge, through the filter, and to the ink cavity where it is stored until one of the PZT units forces it out through the nozzles.
- Nozzle Plate
  The bottom surface of the printhead which contains nozzle holes to direct ejected ink toward the paper below. See the next page.
- Filter
  When the ink cartridge is installed, if any dirt or dust around the cartridge needles is absorbed into the inside of the printhead, there is a large possibility that the nozzles will clog. Clogged nozzles can be detected by alignment failure and dot-missing problems. To prevent these kinds of problems, a filter is set below the cartridge needle and ink flows through the filter on its way to the ink cavity.

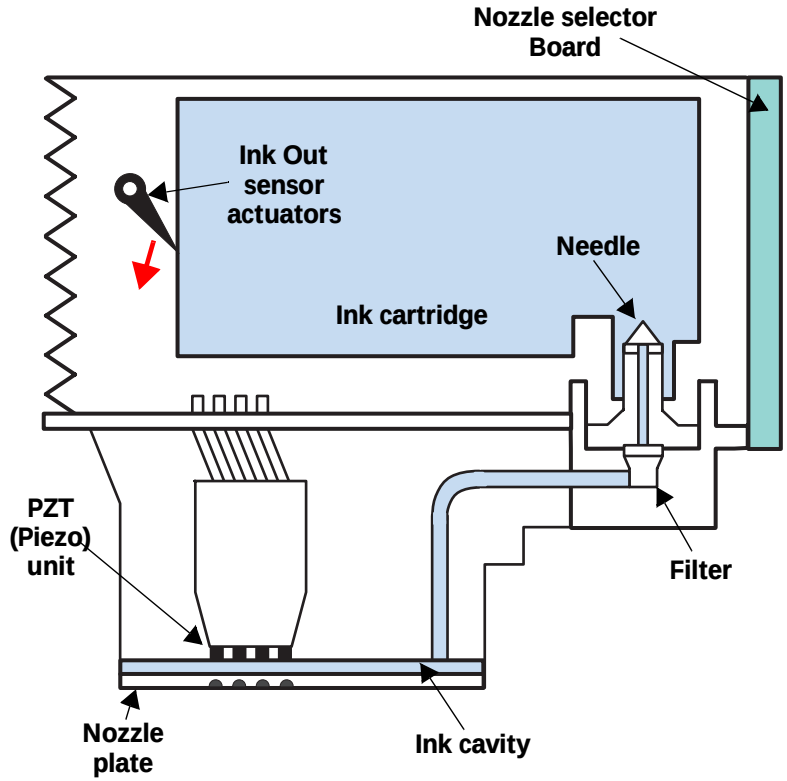



**Figure 2-2. Printhead Sectional Drawing**

- Ink Out sensor actuators (x2)
  The Ink Out sensors (x2) detects whether or not an ink cartridge is installed according to the position of the Ink Out sensor actuator. When a cartridge is installed, the actuator is pushed down, which turns the shaft that is connected to the actuator. The flag at the other end of the shaft activates the Ink Out sensor when the cartridge is fully in place.

See the next page for more details on the nozzle selector board and the ink ejecting process.

## 2.2.2 Printing Process

The following figures show sectional drawings of the printhead in the normal and ejecting states.

1. **Normal State:**
   When no print signal is output, the PZT is in the normal, standby, state.

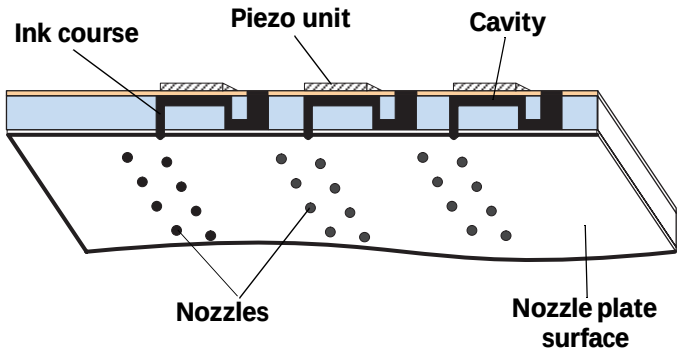



**Figure 2-3. Printhead Normal State**

2. **Ejecting State:**
   When a print signal is sent from the MAIN board, the IC (Nozzle Selector) located on the printhead unit receives the data in 1-byte units. The Nozzle Selector then sends the voltage signal on to the appropriate PZT. Due to the physical properties of the PZT, electrical signals cause the PZT to change shape. When the PZT changes shape, it squeezes the ink cavity, ejecting ink out through the nozzles.

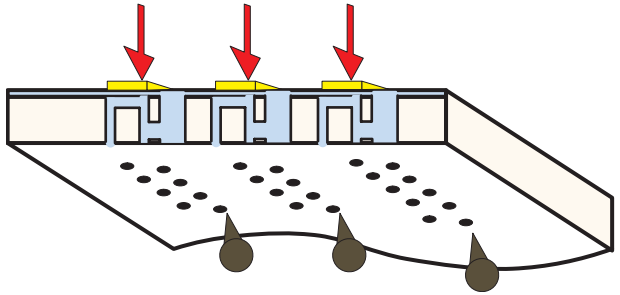


**Figure 2-4. Printhead Ejecting State**

## 2.2.3 Carriage Mechanism and Motor

The carriage mechanism moves the carriage back and forth according to the drive from the carriage motor. See Figure 2-6 on the next page.

The carriage motor is a 4-phase, 200-pole, stepping motor and is driven by 2-2 phase, 1-2 phase, Double 1-2 phase, 2-Double 1-2 phase, and 4-Double 1-2 phase drives. This stepping motor allows the carriage to move freely to fixed positions where necessary operations such as ink absorption can be performed. The following tables show carriage the motor specifications and motor controls.

### Carriage Motor Specifications

| Items | Description |
|---|---|
| Motor type | 4-Phase/200-pole Stepping motor |
| Drive voltage Range | 42VDC ± 5% |
| Internal coil resistance | 7.8 Ohms ± 10%(per phase in 25 °C environment) |
| Control method | Bi-Polar Drive |
| Phase drive | 2-2, 1-2, 2-Double 1-2, and 4-Double 1-2 |

### Phase drive

| Phase Drive | inch/pulse | mm/pulse |
|---|---|---|
| 2-2 | 1/120 | 0.212 |
| 1-2 | 1/240 | 0.106 |
| Double 1-2 | 1/480 | 0.053 |
| 2-Double 1-2 | 1/960 | 0.026 |
| 4-Double 1-2 | 1/1920 | 0.013 |

### CR Motor Control for Each Mode

| Printing mode | Drive Speed [CPS] | Drive frequency [PPS] | Drive method |
|---|---|---|---|
| High Speed Skip | 340 | 4080 | Double1-2, 2-2,1-2 phase drive* |
| Normal Printing | 200 | 2400 | Double 1-2, 2-2 phase drive |
| Capping | 80 | 960 | 2-Double 1-2, 2-2 phase drive |
| Wiping | 40 | 480 | 2-Double 1-2, 2-2 phase drive |
| Cap (Valve Release) | 20 | 240 | 4-Double 1-2, 2-2 phase drive |
| Withdrawal of cap | 5 | 60 | 4-Double 1-2, 2-2 phase drive |

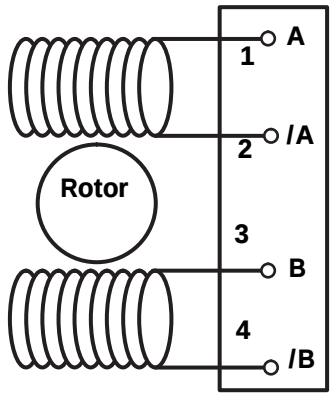



**Figure 2-5. CR Motor Internal Circuit Diagram**

## PLATEN GAP LEVER

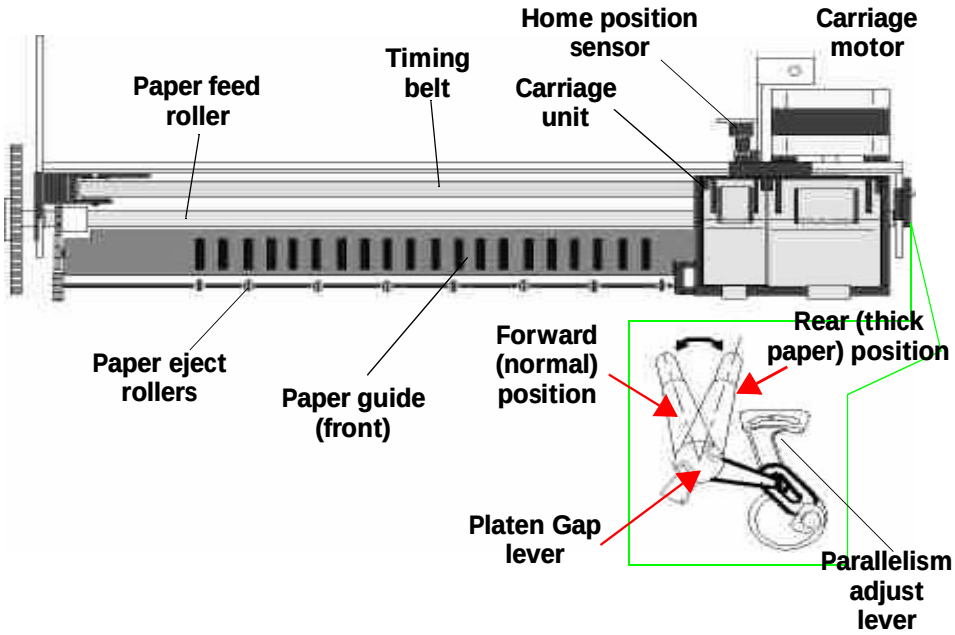



**Figure 2-6. Carriage Mechanism with platen gap lever (Top view)**

As shown in Figure 2-6, the Platen Gap lever can be moved forward or back to adjust for the thickness of the paper. The PG lever is connected to the carriage guide shaft, which raises or lowers the carriage depending on the PG lever position. The nozzle surface remains parallel to the paper in either position thanks to a tilt adjustment mechanism. Also, the two parallelism-adjustment levers, one mounted on each side of the carriage guide shaft, adjust the parallelism between the platen and shaft when the shaft is installed in the factory. This precise adjustment is necessary to make sure the gap between the platen surface and the printhead surface is 1.04 mm in the normal position or 1.74 mm in the thick-paper position.

## 2.2.4 Paper Feeding Mechanism

The paper feeding process begins at the ASF, continues through the PF roller, and ends at the paper eject roller (and star-wheel gear).

The ASF unit, which is common with the Stylus COLOR 740 printers, is driven by the PF motor (stepping motor). Torque sent from this motor switches between the ASF unit and pump/PF roller depending on the position of the disengage lever (described later).

In the EPSON Stylus Scan 2500, a four-phase hybrid type pulse motor is used in the PF motor as a motive power of the paper mechanism. The torque is sent at 2-Double 1-2, Double 1-2, 1-2, and 2-2 phase drives. This motor drives the paper-feeding mechanism as well as the pump mechanism which is necessary for printhead cleaning. By using this pulse motor, it becomes possible to use variable drive levels for many purposes, such as paper feed, slight paper feed, and high or low speed absorption of pump operations. The following table shows PF motor specifications.

### PF Motor Specifications

| Item | Description |
|---|---|
| Motor type | 4-phase/200-pole Stepping motor |
| Drive voltage | 42VDC ± 5% |
| Coil Resistance | 7.8 Ohms ± 10%(per 1 phase under 25°C environment) |
| Control method | Bi-Polar Drive |
| Phase drive | 1-2, 2-2, Double 1-2, 2-Double 1-2 |

### Phase drive

| Phase Drive | Inch/pulse | mm/pulse |
|---|---|---|
| 2-2 | 1/720 | 0.035 |
| 1-2 | 1/1440 | 0.018 |
| Double 1-2 | 1/2880 | 0.0088 |
| 2-Double 1-2 | 1/5760 | 0.0044 |

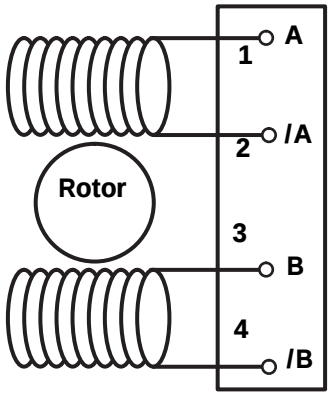



**Figure 2-7. PF Motor Internal Circuit Diagram**

### Motor Control for Each Mode

| Printing mode | Drive Speed [CPS] | Drive frequency [PPS] | Drive method |
|---|---|---|---|
| High Speed Skip | 340 | 4080 | Double 1-2, 2-2,1-2 phase drive* |
| Normal Printing | 200 | 2400 | Double 1-2, 2-2 phase drive |
| Capping | 80 | 960 | 2-Double 1-2, 2-2 phase drive |
| Wiping | 40 | 480 | 2-Double1-2, 2-2 phase drive |
| Cap (Valve Release) | 20 | 240 | 4-Double1-2, 2-2 phase drive |
| Withdrawal of cap | 5 | 60 | 4-Double 1-2, 2-2 phase drive |

Drive from the PF motor is sent to the PF rollers and paper eject rollers as described below.

- ☐ To the PF rollers:
  PF motor pinion gear (CCW rotation)→ Gear 73.6 → PF rollers

☐ To the eject rollers:
PF motor pinion gear (CCW rotation)→ Gear 73.6 → Combination gear (13.5, 308) → Spur gear (28) → Paper eject rollers

***NOTE:*** *Above CCW rotation is mentioned viewing from the PF motor pinion gear side.*

Figure 2-8 shows a paper feeding mechanism block diagram, which includes the parts along the PF motor drive-transmission paths.

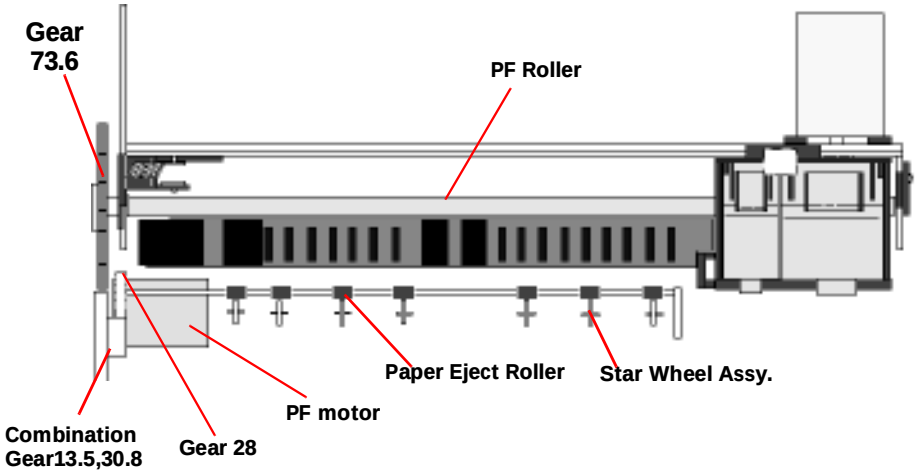



**Figure 2-8. Paper Feeding Mechanism (Top View)**

The printer feeds paper from the ASF (when the PE sensor located near the carriage motor detects paper is loaded) through the paper path and stops feeding when the paper's leading edge reaches the halfway point of the front paper guide. To correct for any misfeeding, the paper is fed back toward the ASF a predetermined number of steps and then it is fed forward again until it reaches the top-of-form position.

Once the printer starts printing, it advances paper using the PF rollers and subrollers until it reaches the last 14mm of the paper, when it advances the paper using the star wheel gear and paper eject rollers.

Torque sent from the ASF/Pump motor to the ASF unit via the disengage mechanism is used for the following operation.

## MULTI-FEED PREVENTION MECHANISM

Like the Stylus COLOR 740 ASF, the ASF built in the Stylus Scan has the multiple-paper-feeding-prevention mechanism to provide accurate and consistent paper feeding. This mechanism prevents a sheet of paper from falling from the paper set position into the paper path. A paper return lever in the mechanism pushes paper that may have fallen off back onto the hopper. After this motion is completed, the LD roller starts loading paper. The multiple-paper-feeding-prevention operation is described in the following steps.

1. When the printer power is turned on, the ASF/Pump motor rotates counterclockwise to detect ASF home position. Then the motor rotates clockwise specified steps to set the LD roller and paper return lever to their proper positions. (See "Standby State" in Figure 2-9.)
2. When the paper loading signal is sent from the PC or the Load/Eject button is pressed, the PF motor turns counterclockwise to let the LD roller load paper. (See "Paper Pick Up State" in Figure 2-9.)
3. Due to the design of the ASF, the LD roller loses friction on the paper and stops at the point where the paper is fed by the PF roller. (See "PF Roller Paper Feed State" in Figure 2-9.)
4. When the next print signal is sent or the Load/Eject button is again pressed, the PF motor rotates clockwise a specified number of steps to set the LD roller and the paper return lever in place. (See "Standby State" in Figure 2-9.)

***NOTE:*** *If no print signal is sent for a predetermined number of seconds in step 4, the LD roller and the paper return lever automatically return to the standby state.*

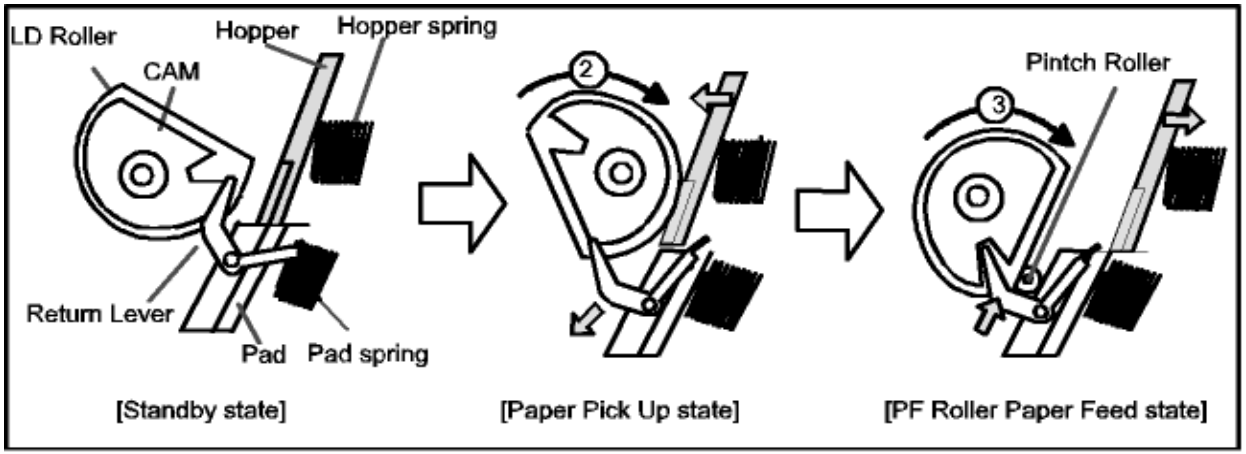



**Figure 2-9. Multiple Paper Loading Prevention Mechanism (right side view)**

## SMALLER TRAILING-EDGE MARGIN

Like the Stylus COLOR 740, this model uses a new design to allow printing up to the last 3mm by changing the design and position of the star-wheel gear. The star-wheel gear assembly has been shifted 5 degrees from directly on top of the eject rollers towards the front paper guide. This change suppresses the tailing edge of the paper so that the old minimum margin of 14mm has been reduced to only 3mm.

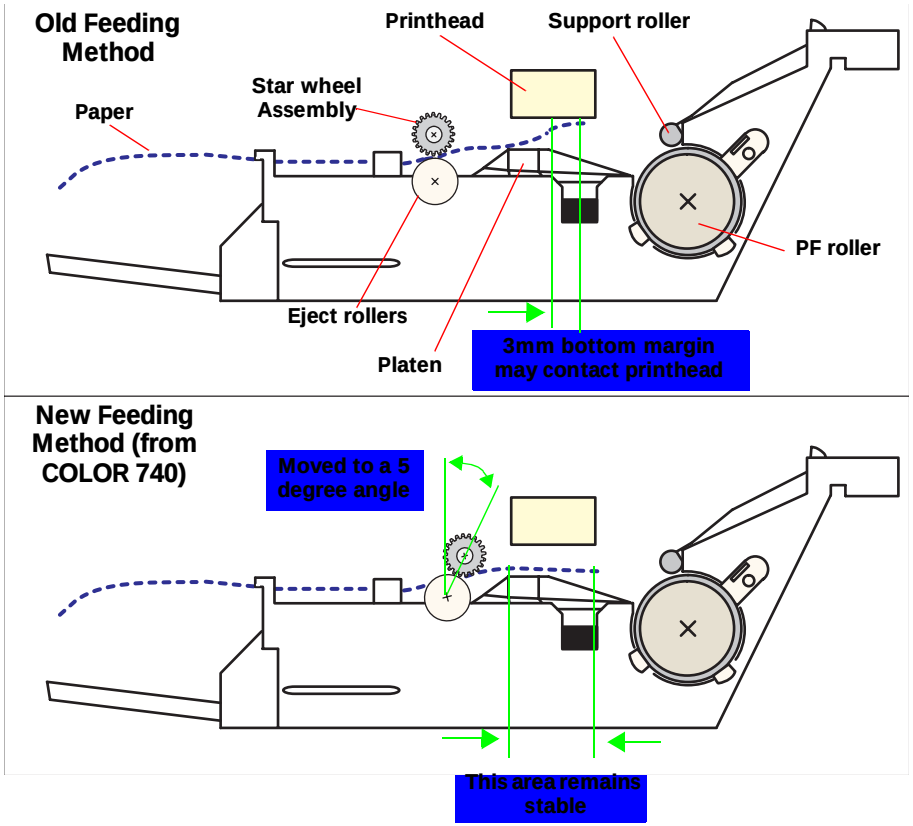



**Figure 2-10. 3mm improved margin (viewed from right side)**

## CARRIAGE LOCK MECHANISM

The carriage lock mechanism prevents the carriage from being left at an uncapped position for a long time which can occur due to user mistakes, physical shock, vibration during transport, and so on. The CR lock mechanism is driven by the stepping PF motor. See Table, " PF Motor Specifications," on page 40 for motor specifications.

The PF motor controls the CR lock mechanism as well as the PF mechanism depending on the direction of the PF motor rotation. The CR lock mechanism is located at the right end of the paper eject roller.

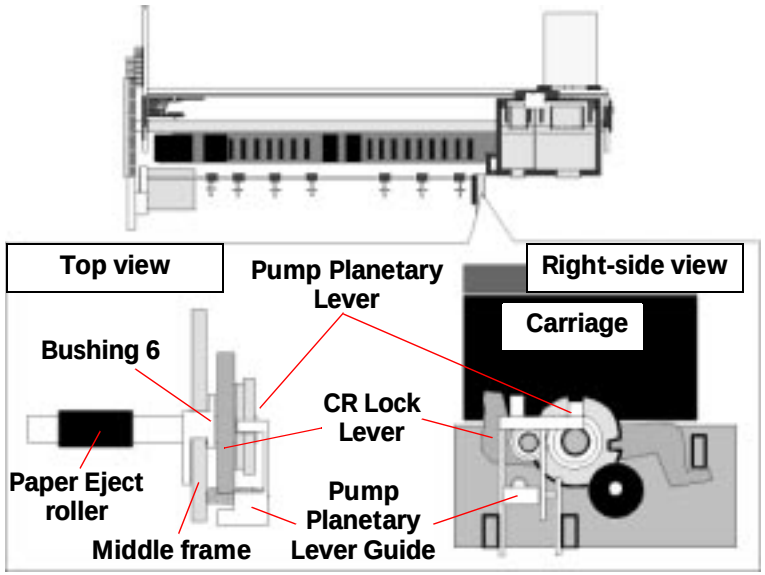



**Figure 2-11. CR Lock Mechanism**

While the PF motor drive is used for paper feeding (PF motor rotation = CCW), the CR Lock Lever is set under the Paper Eject Frame. But the CR Lock lever rises up and locks the carriage when the PF motor rotates CW.

The PF motor drive is sent to the CR Lock lever via the Paper Eject roller.

PF Motor pinion gear (CW rotation) → Gear 73.6 → Combination gear → Gear 28 → Paper Eject Roller → CR Lock Lever

If the carriage is left uncapped for a long time, ink on the printhead surface gradually thickens and may clog the nozzles. In some cases, the nozzles may be so thoroughly clogged that they cannot be cleared even after performing multiple cleaning operations.

To prevent clogged nozzles, the printer caps and locks the carriage in the following conditions.

- **Power off sequence:**
  When power is turned off, even during printing, the printer caps and locks the carriage at the end of the power-off sequence.
- **Power on sequence:**
  When power is turned on, the printer automatically performs an automatic (power-on) cleaning cycle and then caps and locks the carriage.

***NOTE:*** *The power-on cleaning cycle is an automatic head cleaning sequence that is performed every time the power is turned on. The timer IC, which is powered by the lithium battery, measures the length of time the printer has been off. The printer selects and performs the appropriate cleaning operation according to the length of time it has been off.*

- **Paper eject sequence:**
  When the Load/Eject button is pressed, the printer ejects any paper in the paper path. If no print data is received at this time, the printer caps and locks the carriage and then enters the standby mode. However, if no paper is in the paper path when the Load/Eject is pressed, the printer loads a sheet and does not lock the carriage.

PF motor torque is always transmitted to the CR lock lever side, but the operation of the CR lock mechanism varies depending on the rotation direction of the motor.

Clockwise = sets the carriage lock lever
Counterclockwise= releases the carriage lock lever

## PAPER PICK-UP OPERATION

When the Load/Eject switch is pressed or printing order is input, the carriage unit moves until the left edge and collides with paper pick up trigger lever. When the carriage collides with this trigger level, a planetary gear located on the same axis is also pushed at the same time and conveys the motive power on the platen to the adjoining gear line side for ASF drive.

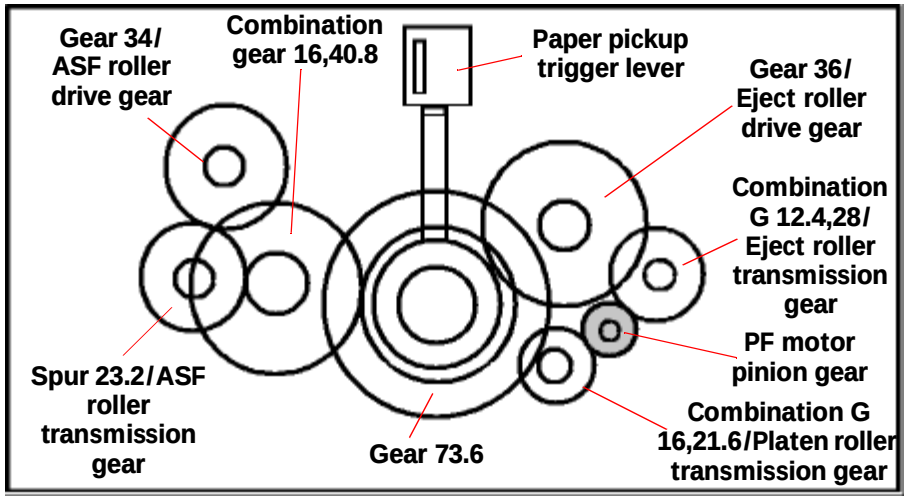

Gear 34/ ASF roller drive gear
Combination gear 16,40.8
Paper pickup trigger lever
Gear 36/ Eject roller drive gear
Combination G 12.4,28/ Eject roller transmission gear
PF motor pinion gear
Combination G 16,21.6/Platen roller transmission gear
Gear 73.6
Spur 23.2/ASF roller transmission gear

**Figure 2-12. Paper Pickup Mechanism**

## 2.2.5 Ink System

Ink system mechanism consists of 1) cap mechanism, 2) pump mechanism, 3) carriage lock mechanism, 4) waste ink absorber and 5) ink sequence. Out of these mechanisms, 1) to 4) are physical mechanism and parts which are mounted on the printer mechanism and 5) the ink sequence is performed automatically by the firmware. The EPSON Stylus Scan 2500 has no engage/disengage mechanism, meaning the pump and platen are always at work when the PF motor operates. The figures below show printhead positions when the ink system and various ink-pumping sequences are performed.

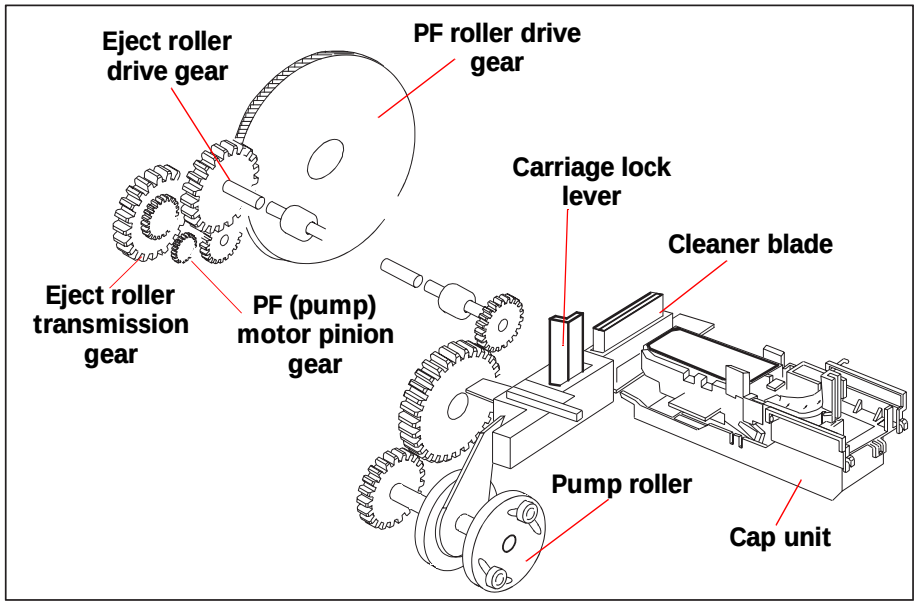



**Figure 2-13. Ink System Mechanism**

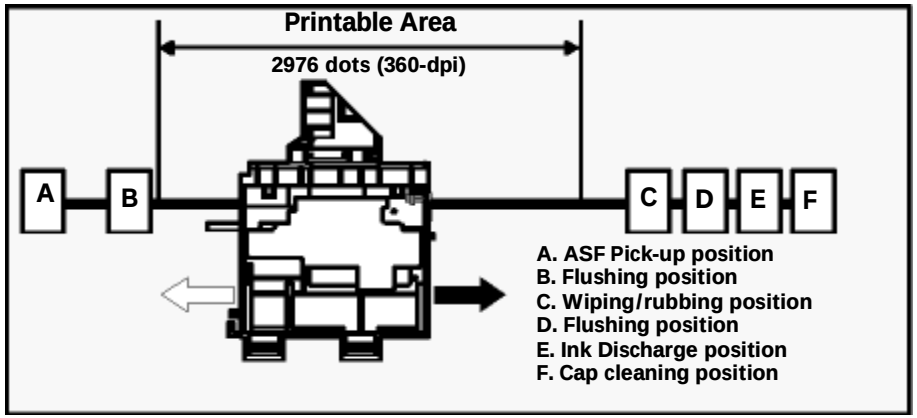



**Figure 2-14. Major Ink Sequence Positions on Carriage**

## 2.2.6 Pump, Carriage Lock, Head Cleaner Mechanism

In the EPSON Stylus Scan 2500, there is no switch or mechanism to switch between the ink pump and paper feed operations. Therefore, whenever the paper feed/pump motor rotates, the pump-drive roller inside the pump unit rotates. However, the rotational direction of the rollers determines whether or not the pump sucks ink. Also, even if the pump rotates in the ink-absorption direction, ink is not absorbed if the carriage is in the false-absorption position. Figure 2-13 shows process of conveying motive power to the pump drive roller.

The process of conveying the motive power to the paper eject roller is shown in Figure 2-15. This motive power is conveyed to Gear C through Gear B. The lever that drives Gear C, the carriage lock, and the head-cleaner mechanism is shown separately but it is constructed as one unit. Since the engagement of these parts depends on the tension of the compression spring, if the lever is burdened, only Gear C and the pump roller rotate and no more motive power is conveyed to the lever part.

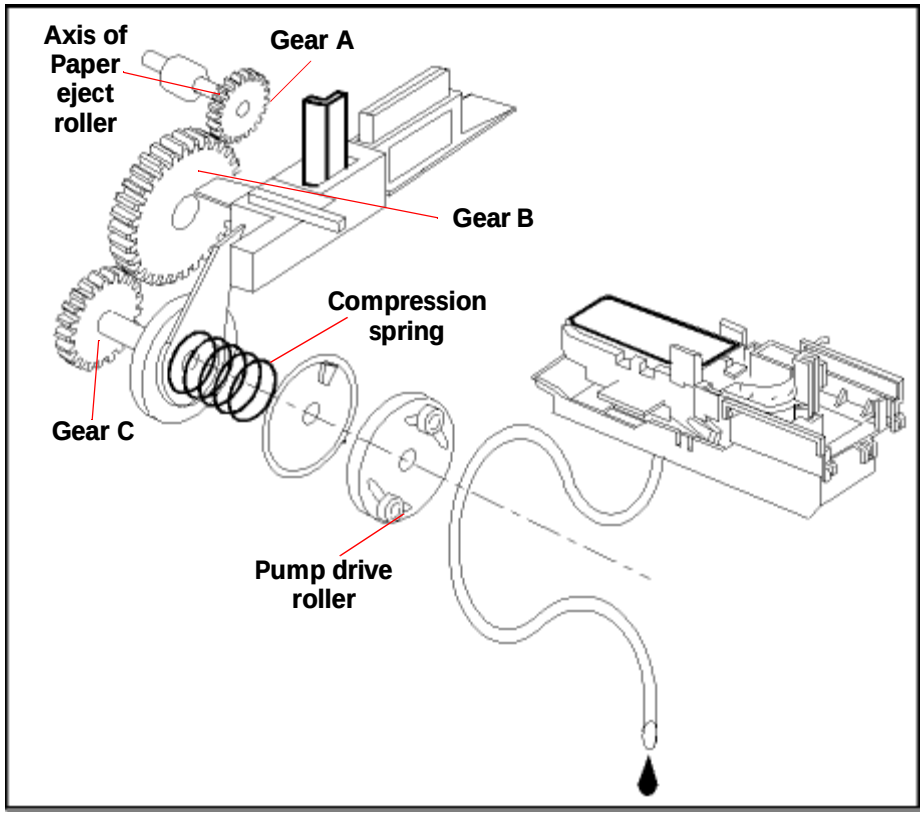



**Figure 2-15. Pump Mechanism Power Transmission Process**

The table below shows PF/Pump motor rotational direction and pump system operation.

## Pump Motor Rotation and Function

| PF motor pinion gear rotation (looking at gear surface) | Pump unit operation |
|---|---|
| Clockwise (CW) forward rotation | 1) Release the tubes<br>2) Disengage Head Cleaner<br>3) Disengage carriage lock |
| Counterclockwise (CCW) backward rotation | 1) Squeeze tubes to pump ink<br>2) Engage Head cleaner<br>3) Engage carriage lock |

Refer to Figure 2-16 in the right column which shows the pump operations at clockwise and counterclockwise rotation.

During ink-absorptive operations such as cleaning and flushing (but not during normal printing), ink drains from the ink cartridge to the waste-ink pads through the cap. During printing and flushing, ink is fired out of the nozzles by the PZT. But during absorption operations the head is capped and ink is sucked off the nozzle plate by the force of the vacuum created by the pump drive and the PZT does not move.

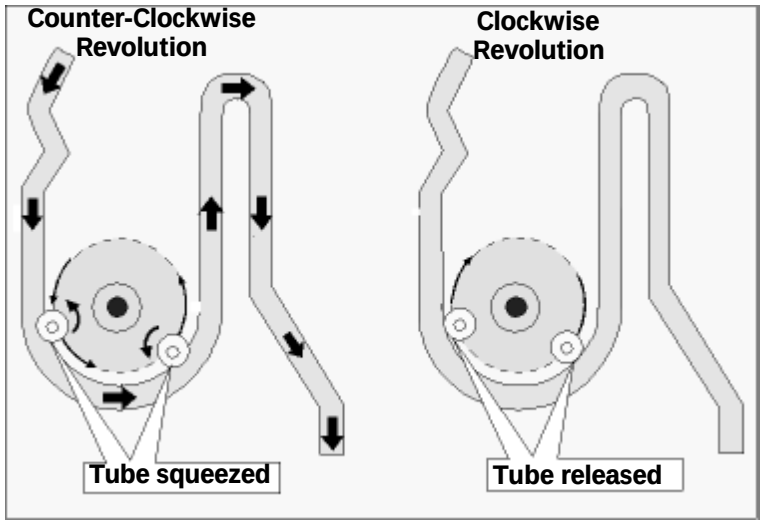



**Figure 2-16. Pump Roller Rotation and it's Operation**

### Pumping modes

| Pump Mode | Revolutions | Absorption |
|---|---|---|
| Low speed | 0.38rev/second | 0.06ml/second |
| Regular absorp-tion | 1.3 rev/second | 0.2ml/second |
| High speed | 2.6rev/second | 0.4ml/second |
| Super high speed | 3.38rev/second | 0.54ml/second |

## 2.2.7 Cap Mechanism

The cap mechanism prevents ink from thickening and sticking on the head surface when the printer is not in operation and it also plays a part in cleaning the printhead. During the power-off sequence, the printhead moves to the right where the head surface and cap come into contact, and the head surface contacts the rubber frame of the cap surface until the power is turned back on.

An absorber pad is spread in the cap and can hold a certain amount of ink which is absorbed from the head without draining it to the waste ink pad. Also, below the absorber pad, there are two valves that control the adhesion pressure between the head and cap surface. There is also one exit and tube to drain ink to the waste ink pads.

Position A

When the carriage is out of the HP (for example in the printable area or paper feed position), the valves on the cap mechanism stay in Position A (closed) as shown to the right.

Position B

When the carriage returns to the right, it catches the carriage flag on the cap mechanism. This raises the cap to meet the head surface. This position is used for head cleaning because the valves are still closed but the rubber around the cap traps air, so when the pump sucks air away from the cap, a vacuum is created and ink is sucked away from the head surface. Ink absorption and slight ink absorption are performed in Position B.

Position C

By moving the carriage a little further to the right, the frame flag on the cap mechanism contacts the frame and the air valve opens. When the carriage is in this position and the pump sucks air, no ink is absorbed from the head surface but ink left in the absorber pad in the cap is drained.

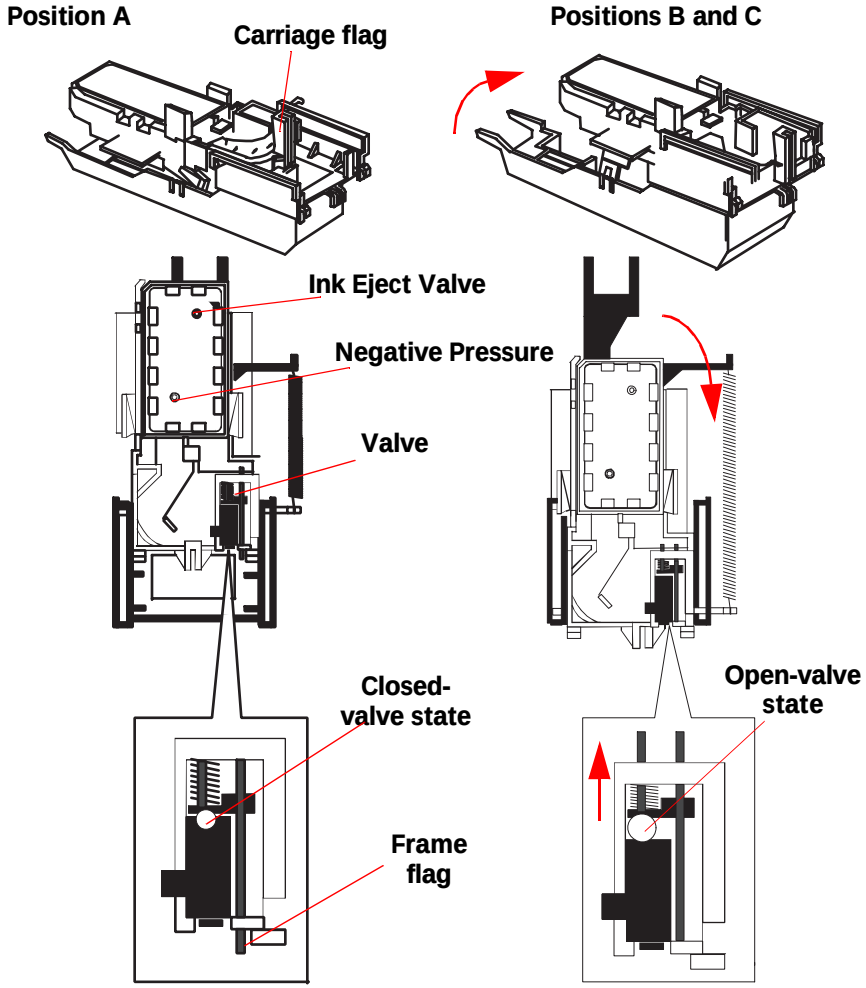



**Figure 2-17. Cap mechanism and valve operation**

## 2.3 Scanner Principles

This section explains the operating principles of the scanner mechanism. The scanner mechanism can be divided into the Carriage Unit and Carriage Operation.

### 2.3.1 Carriage Unit

The Carriage Unit is mainly composed of the CCD sensor board, inverter board, lamp (light source), mirror, and lens. (See Figure 2-18 and Figure 2-19.)

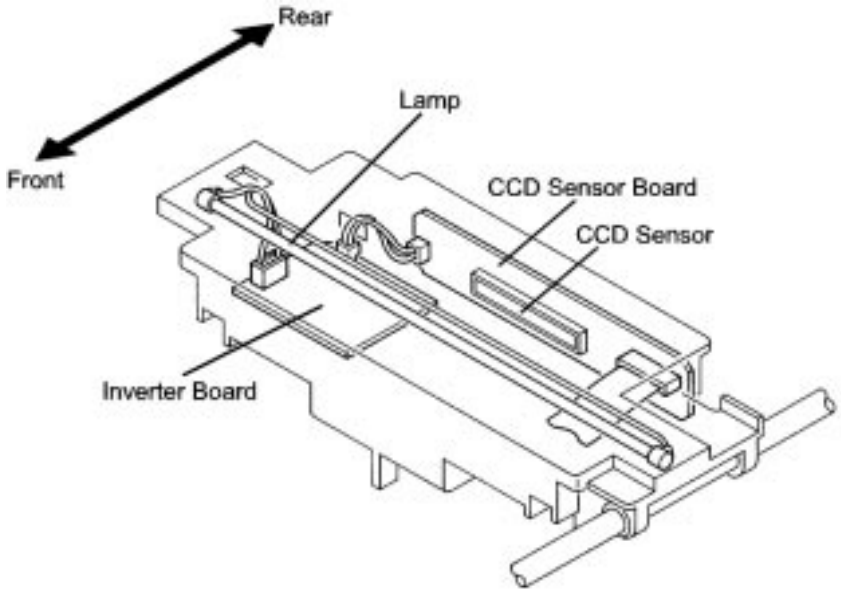



**Figure 2-18. Carriage Unit Component**

CCD Sensor Board: This board controls the Color CCD line sensor (independent R,G,B) and drive circuit.When power is turned on and the LCD display shows "Warm up", the CCD sensor board is actually performing a standard white test.

Inverter Board: This board provides voltage to drive the lamp.

Lamp: A white cold fluorescent lamp is used as the light source.

Mirror and Lens: The light emitted to the document reaches the CCD sensor after being reflected on some mirrors one after another. Instead of changing the light source to create R/G/B light component as many previous models did, the color CCD itself creates each R/G/B light component.

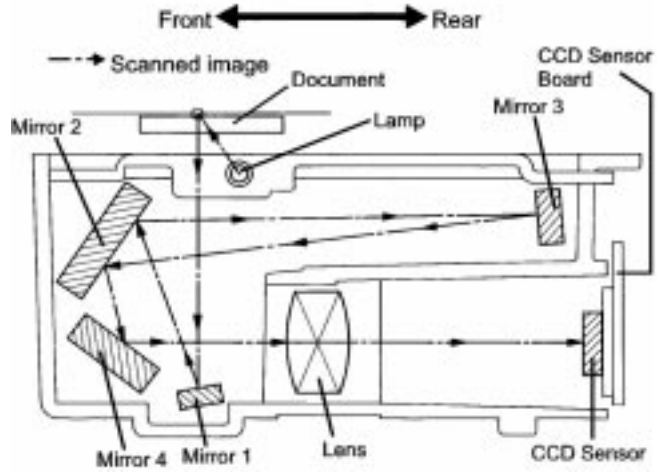



**Figure 2-19. Mirror, Lens Mechanism**

## 2.3.2 Carriage Operation

Scanning is performed in the main scan direction (=1 line) by the CCD sensor and in the sub-scan direction (=several lines) by the carriage movement. (See Figure 2-20.)

The line-type, color CCD sensor can scan 1 line in main scan direction (parallel) to the carriage unit) by one time. When scanning next lines after the second line in sub-scan direction, CR driving moves the carriage unit, which has CCD sensor inside, and scan the other lines. The scanned data is sent to the control board. The scanned data for “n” lines and “n-1” line are processed consecutively.

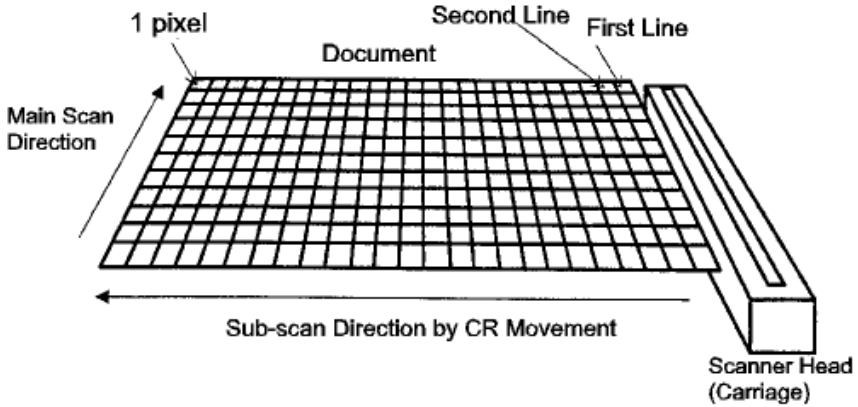



**Figure 2-20. Carriage Movement**

The Carriage Unit slides in the sub-scan direction along the guide rail. For this sliding operation, the carriage motor drives the timing belt attached to the carriage unit by conveying the driving force through the driven pulley and reduction gear. Scanning start position is determined by CR HP sensor, which is located on the control board. Since the stepping motor is used for CR motor, carriage head position is controlled under the open loop system.

# 2.4 Local and PC Copy Principles

This section covers the main differences between Local Copy and PC Copy operations.

- Local Copy = Scan and print the scanned document using only the Stylus Scan processing power. Can be connected or not connected to a computer.
- PC Copy = Scan, process the scanned document in the open application, and print from the application.

## 2.4.1 Local copy process

Scan > gamma curve > color matching table > print

1. The scanner scans at 300 or 600 dpi.
2. The image data is processed through the gamma curve to remove the background color of plain paper or photo paper. Unlike the Stylus Scan 2000, this image processing includes MicroWeave, halftones, and so on.
3. The color matching table is consulted to convert RGB to CMYK.
4. The printer prints at 360 x 360 or 720 x 720 dpi, and color is full color.

**Stylus Scan 2500 Local Copy**

| Mode | Setting | Scan Res. dpi | Print Res. dpi | Dot Size | Media | Original Doc. Type | Background Color Removal |
|---|---|---|---|---|---|---|---|
| B/W | Normal | 300 | 360x360 | Normal | Plain Paper | Text - Business doc. | Newspaper color |
| B/W | Fine | 600 | 720x720 | Variable | Plain Paper | Photo - Text & Photo | EPSON Photo Quality Inkjet paper color |
| Color | Normal | 300 | 360x360 | Normal | Plain Paper | Text - Business doc. | Plain paper color |
| Color | Fine | 600 | 720x720 | Variable | Plain Paper | Photo - Text & Photo | EPSON Photo Quality Inkjet paper color |
| Color | Photo | 600 | 720x720 | Variable | Photo Paper | Photo only | No color removal |

## 2.4.2 PC copy process

**PC Copy Settings**

| Mode | Setting | Scan Res. dpi | Print Res. dpi | Media |
|---|---|---|---|---|
| Text | Normal | 240 | Speed | All |
| | Fine | 360 | Quality | All |
| Text & Image | Normal | 240 | Speed | All |
| | Fine | 360 | Quality | All |
| Photo | Normal | 240 | Speed | All |
| | Fine | 360 | Quality | All |
| OriginalColor-Copy | Normal | 240 | Speed | All |
| | Fine | 360 | Quality | All |

### 2.4.2.1 Normal PC copy

Scan > gamma curve > image processing > color matching table > print

1. The scanner scans at 300 or 600 dp, but EPSON TWAIN calls for 240 or 360 dpi image data (to match printer resolution).
2. The image data is analyzed to remove the background color of paper and to remove any image from the reverse side of the paper.
3. The image is improved with the Auto Document Enhancement feature which:
   - Sharpens edges
   - Smoothens characters
   - Removes moire (usually - see original color copy below) from documents that were printed from ink jet printers - this prevents CMYK color meshes from doubling when the image is printed again from an ink jet printer
   - AutoPhotoFine (similar to PhotoEnhance in the driver) is used to improve quality.
4. The color matching table is consulted to convert RGB to CMYK.
5. The print resolution varies according to media type; same as Speed vs Quality slide bar in the printer driver.

### 2.4.2.2 Original color copy

Original color copy does not process or enhance the scanned data. This is useful in two cases

Scan > OriginalColorCopy > color matching table > print

1. The scanner scans at 300 or 600 dp, but EPSON TWAIN calls for 240 or 360 dpi image data (to match printer resolution).
2. The image data is not analyzed or modified.
3. The color matching table is consulted to convert RGB to CMYK.
4. The print resolution varies according to media type; similar to the Speed vs Quality slide bar in the printer driver.

## 2.5 Electrical Circuit Operating Principles

EPSON Stylus Scan 2500 contains the following three electric circuit boards.

- ☐ Electronic Boards for Stylus Color 2500 are;
  - Main: B102 Main Board
  - Power Supply: B102 PSB/PSE Board
  - Panel: B102 PNL Board

Refer to Figure 2-21 for the major connection of the 3 boards and their roles.

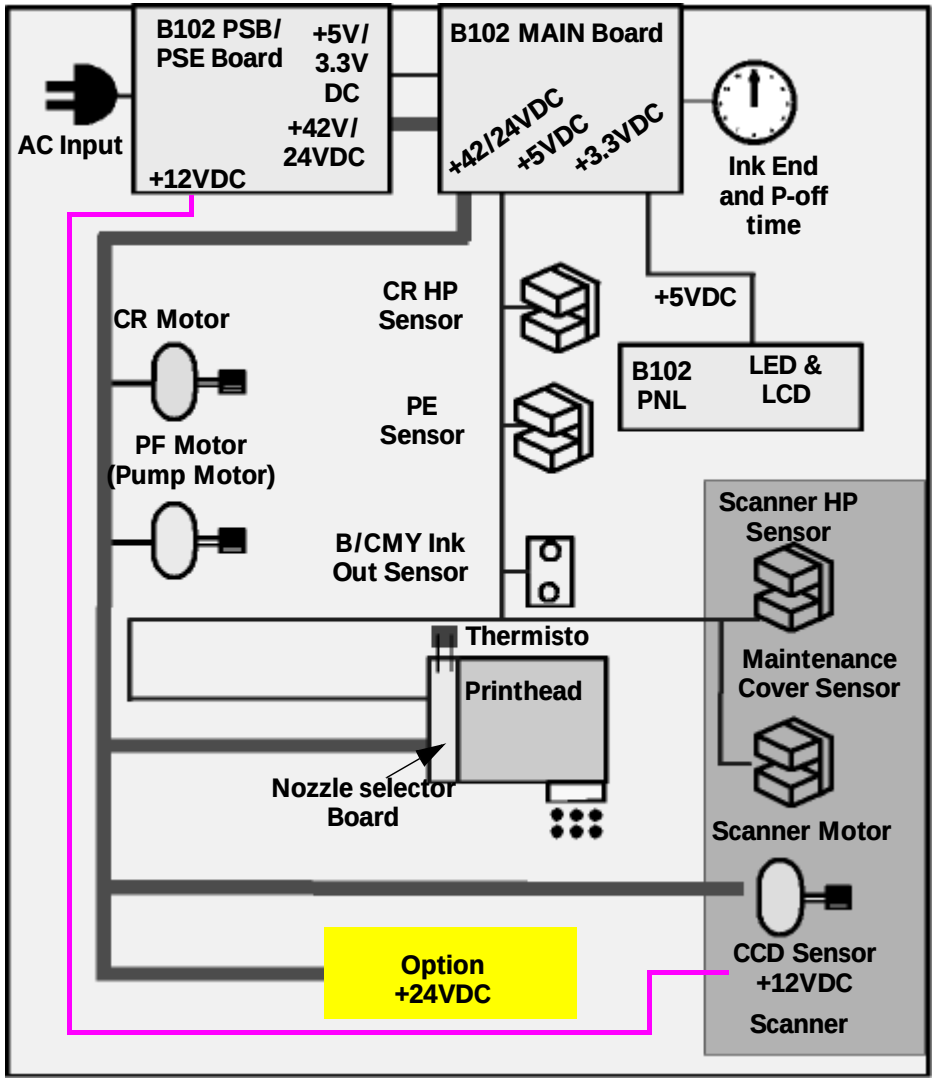



**Figure 2-21. Electric Circuit of Stylus Color 2500**

## 2.5.1 B102 PSB/PSE Board

The power supply board for the EPSON Stylus Scan 2500 generates +42VDC to drive the motors, +24VDC to drive the scanner and option, +12VDC to power the lamp, and +5VDC/+3.3VDC to power the printer logic. The table below shows application of voltages generated by PSB/PSE board.

1. Even if power is turned off during the middle of a print job, since the driving power is turned off after the carriage goes back to the carriage lock position, the possibility of clogged ink nozzles is reduced.
2. If power is turned off while paper is being fed in the printer, the same operation mentioned above is performed and the driving power is turned off after the paper is completely ejected. The time allowed is approximately 30 seconds, meaning voltage is flowing for 30 seconds after the power is turned off.

### Application of DC Voltage

| Voltage | Application | |
|---|---|---|
| | Printer | Scanner |
| +42VDC | • CR Motor<br>• PF/Pump Motor<br>• Printhead drive | |
| +24VDC | | • Scanner Motor<br>• Option unit drive |
| +12VDC | | Inverter board<br>CCD sensor board |
| +5VDC | Common<br>Control circuit<br>Sensors (CR HP, PE, ASF)<br>Control panel<br>Printhead control<br>Option unit logic | |
| +3.3VDC | Control circuit | |

Figure 2-22 shows a block diagram of power supply board. The process from the input of AC voltage to the output of DC voltage is explained in the following pages.

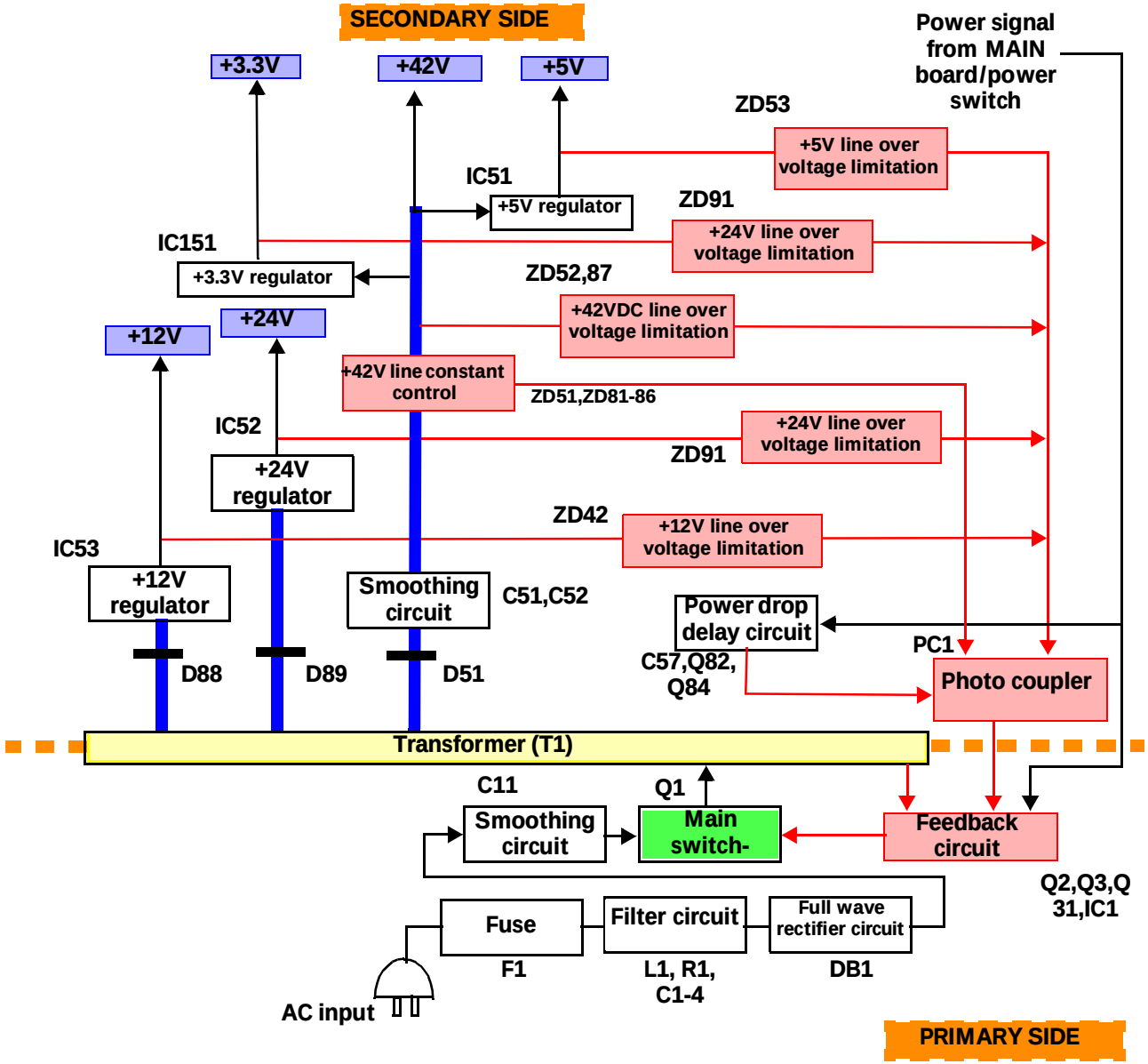



**Figure 2-22. B101 PSB/PSE Board Block Diagram**

1. As long as the AC power cable is plugged into a power source, voltage flows through the primary side (bottom in figure above) of the power supply board.
2. The fuse prevents damage to the power supply board in case the current is too strong.
3. The filter circuit acts to filter incoming electrical noise and to smoothen the electrical current.
4. The full wave rectifier circuit converts AC to DC.
5. The smoothing circuit stabilizes out the DC wave.
6. The main switching circuit controls the flow of current to the transformer (hence to the entire secondary side). The main switching circuit, transformer, and feedback circuit work in combination like the heart, lungs, and brain (respectively) of the human body. The main switching circuit is the variable-flow generator like the heart, the transformer convert the power to a usable form like lungs adding oxygen to blood, and the feedback circuit controls the flow like the brain controlling the heartbeat/pulse.
7. The transformer receives approximate 100V or 220V DC (depending on the model) and steps the voltage down before sending it to the secondary side.
8. The current is stabilized as it goes through another smoothing circuit.
9. The 24V, 12V, 5V, and 3.3V regulators control the flow of current so that only the rated voltage flows through each regulator. The input level fluctuates but the output is constant.
10. The 42V, 24V, 12V, 5V, and 3.3V line over-voltage limitation protectors monitor their individual lines for any voltage over the rated amount. If over-current is detected, a signal is sent to the photo coupler to decrease current.
11. The +42V line constant control is similar to a regulator in that it is always working, but instead of fixing the over-current, it reports the over-current to the photo coupler.
12. The photo coupler is one part of the over-current feedback system. A photo coupler is necessary because electrical current cannot cross the from the primary side to the secondary side and vice-versa; the absolute ground levels for the primary side (AC as well as DC) and secondary side (DC only) are different, so they will short if they come into contact. The photo coupler transmits signals via a photo emitter.
13. The feedback circuit 1) receives over-current information from the photo coupler by means of a photo receiver 2) monitors the transformer for over-current and 3) receives power-supply information/commands from the MAIN board and power switch. The feedback circuit changes the voltage sent from the main switching circuit to the transformer when necessary.
14. The power-drop delay circuit is a thirty-second timer that activates whenever the power is turned off. The thirty-second period is necessary to guarantee safe completion of the power-down sequence.

## 2.5.2 B102 MAIN Board

The B102 MAIN Board controls the printer, scanner, copy function, pumping, paper feeding, and all signals to/from the control panel unit. The following figure shows the MAIN Board circuit diagram for EPSON Stylus Scan 2500.

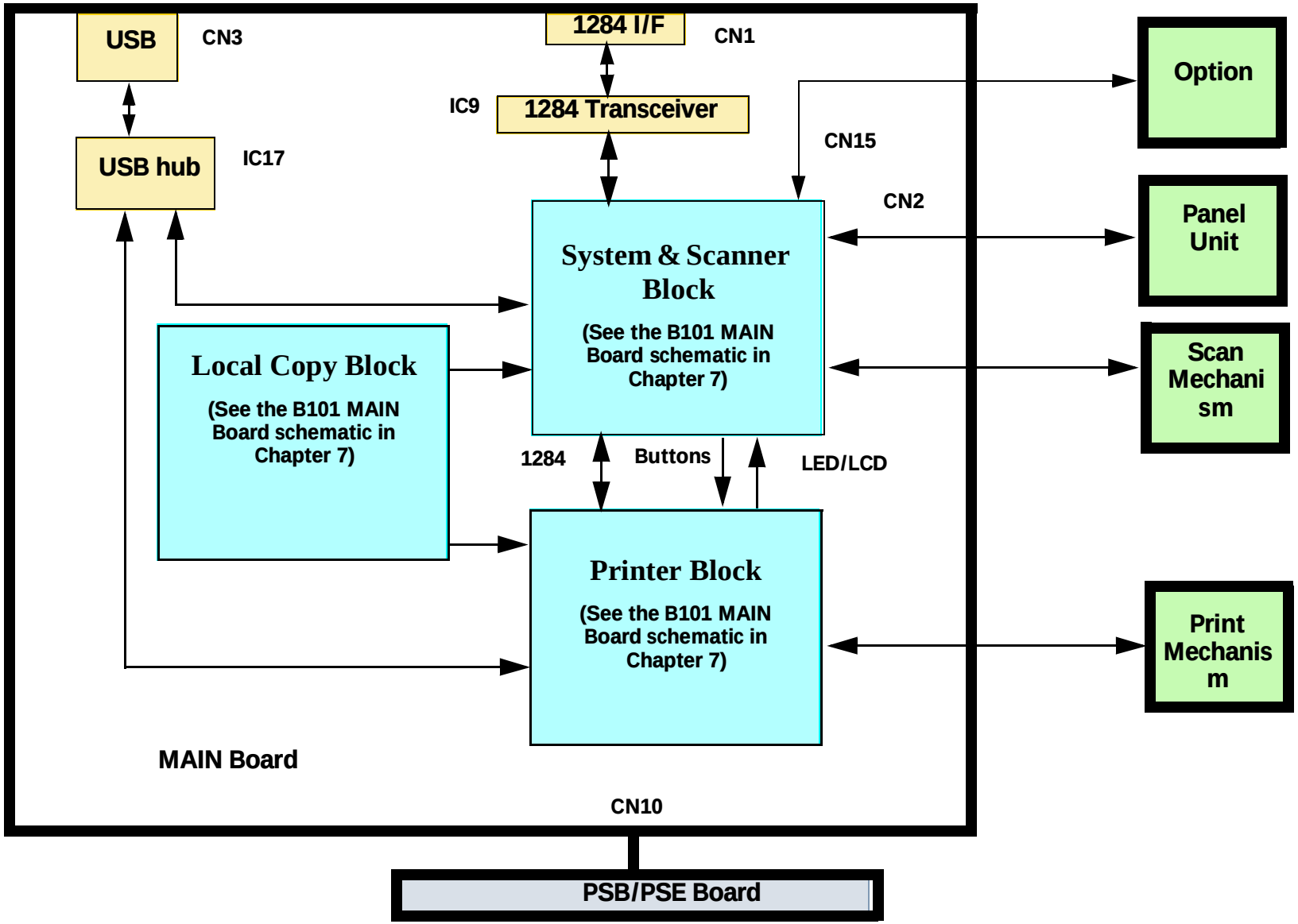



Figure 2-23. B102 Main Board Block Diagram

- The System & Scanner Block

  The System & Scanner Block is all of the ICs that handle image data from the scanner. Also this block handles all control/communication signals sent to and from the Control Panel unit as well as any installed options.

- The Printer Block

  The Printer Block is all the ICs that handle print data and communication data to and from the print mechanism. The print data can come through the USB or parallel port, and communication can be with the print mechanism, System & Scanner Block, or host. One example of communication data from the System & Scanner Block would be a paper feed signal generated when the user presses the Paper Feed button.

- The Local Copy Block

  The Local Copy Block receives scanned data from the System & Scanner Block, removes the background color of the paper according to the local copy setting, performs image processing to improve quality, converts color from RGB to CMYK using the color matching table, and sends the modified data to the Printer Block.

- The USB hub

  There are actually two USB interfaces (one for each IC block) on this model plus the USB hub. The hub receives incoming signals or data and determines which IC block to send the data to.

CHAPTER

3

# TROUBLESHOOTING

# 3.1 Unit Level Troubleshooting

When a problem occurs, you can identify the defective unit according to the symptoms exhibits. The table below lists the symptoms of certain problems. Once the problem is identified, refer to the flowchart that corresponds to the problem.

The following flowchart illustrates the main steps of the troubleshooting process.

***NOTE:*** *There is a special section for motors and sensors that starts on page 73.*

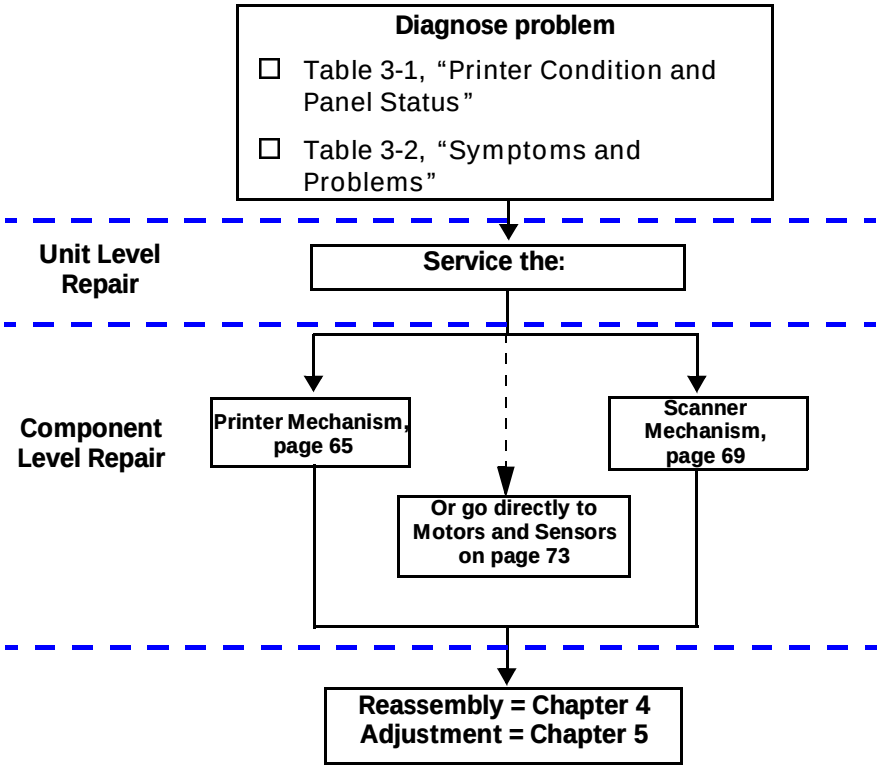

Diagnose problem
Table 3-1, "Printer Condition and Panel Status"
Table 3-2, "Symptoms and Problems"
Unit Level Repair
Service the:
Component Level Repair
Printer Mechanism, page 65
Scanner Mechanism, page 69
Or go directly to Motors and Sensors on page 73
Reassembly = Chapter 4
Adjustment = Chapter 5

**Figure 3-1. Troubleshooting Process Flowchart**

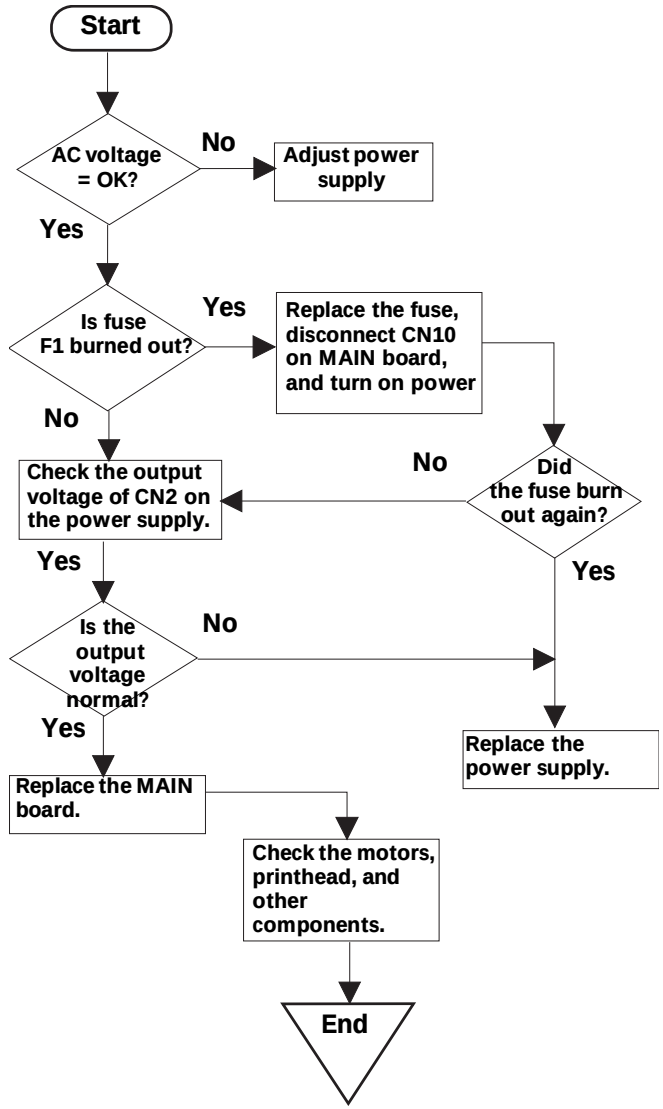
**Table 3-1. Printer Condition and Panel Stat us**

| Error Status | Indicators | | | | Recovery |
|---|---|---|---|---|---|
| | Power | Ink out (Black) | Ink Out (Color) | Paper Out | |
| Paper Out | --- | --- | --- | On | Load paper by pressing the load/eject button. |
| Paper jam condition | --- | Off | Off | Flash | Eliminate a paper then press the load/eject button. |
| No Ink cartridge or Ink end (black) | --- | On | --- | --- | Install a new black ink cartridge by pressing the load/eject button for 3 seconds. |
| No Ink cartridge or Ink end (color) | --- | --- | On | --- | Install a new color ink cartridge by pressing the load/eject button for 3 seconds. |
| Maintenance request | Flash | Flash | Flash | Flash | Change the waste ink pads and reset the EEPROM. |
| Fatal error | Flash | On | On | Flash | Turn the printer off and on again. If the printer does not recover, repair the appropriate part. |

**Table 3-2. Symptoms and Problem s**

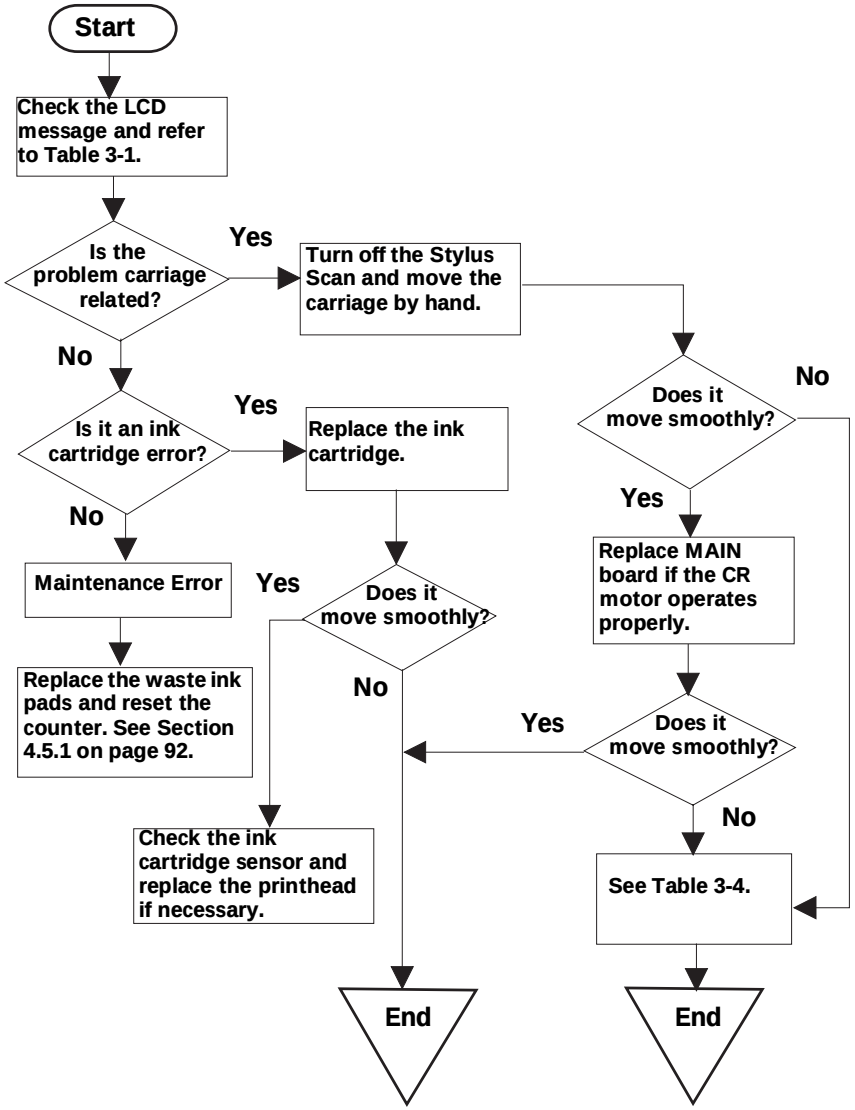
| Symptom | Problem | Flowchart No. |
|---|---|---|
| Printer does not operate at power on. | LEDs do not light.<br>Printer mechanism does not operate. | Flowchart 3-1 |
| Error is detected | Error is indicated by LED indication. | Flowchart 3-2 |
| Failure occurs during printing. | Printing is not performed.<br>Abnormal printing (missing dot, etc.)<br>Print quality is poor. | Flowchart 3-3 |
| Printer does not feed paper correctly. | No paper is fed.<br>Paper feed is irregular.<br>Paper jam occurs. | Flowchart 3-4 |
| Control panel operation is abnormal. | No response to button access. | Flowchart 3-5 |

## 3.1.1 Printer/Scanner does not operate at power on



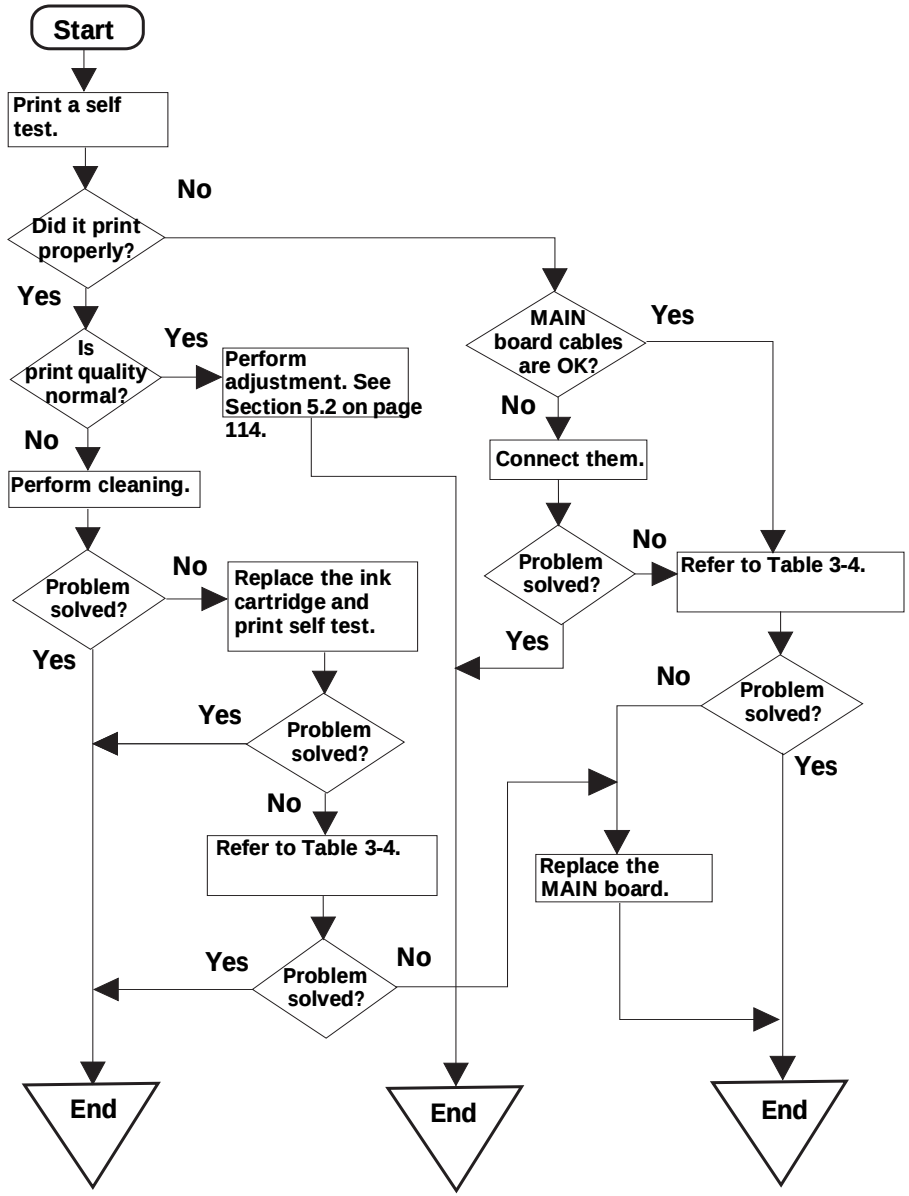

**Flowchart 3-1.**

## 3.1.2 Error is detected



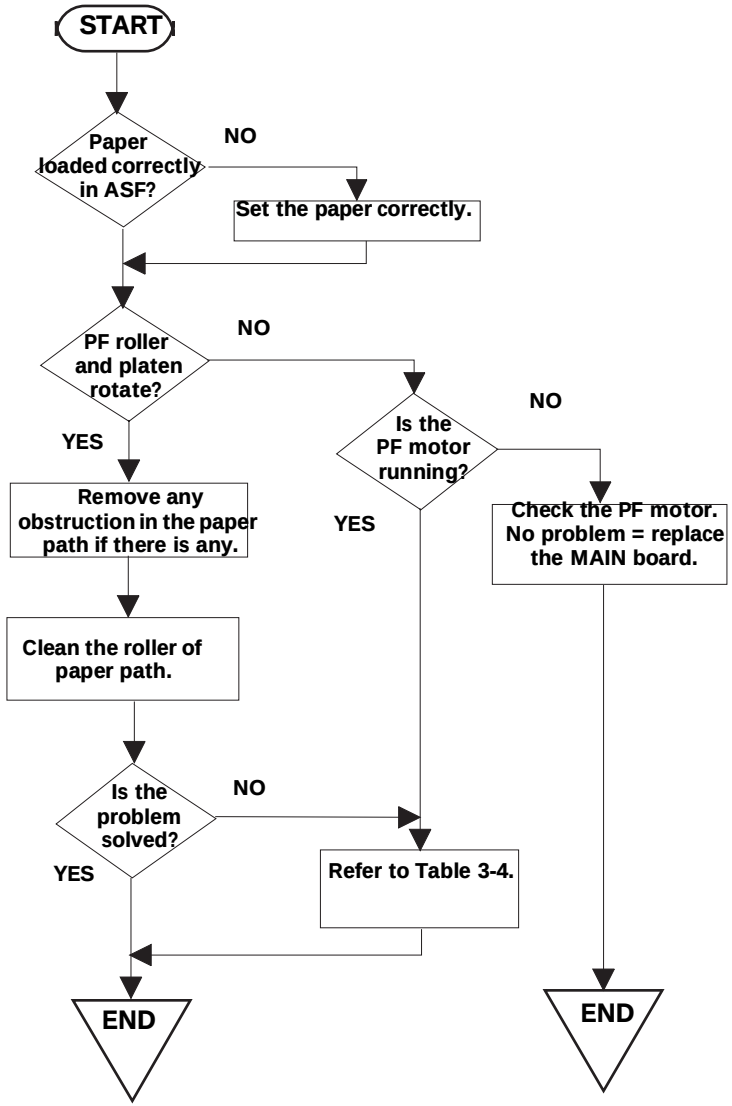

Flowchart 3-2.

## 3.1.3 Failure occurs during printing



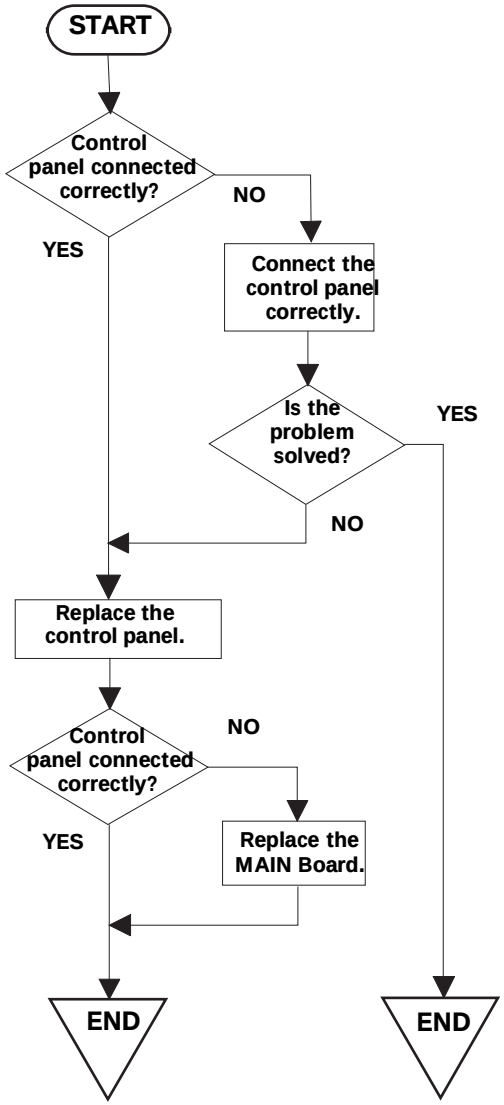

Flowchart 3-3.

### 3.1.4 Printer does not feed paper correctly




Flowchart 3-4.

### 3.1.5 Control panel operation is abnormal




Flowchart 3-5.

## 3.2 Printer Related Troubleshooting

This section provides instruction for repairing the printer mechanism. It describes various problems, symptom, likely causes, checkpoints, and solutions. Select appropriate symptom from the table and check each parts and its function as described in the checkpoint.

**Table 3-3. Printer-Specific errors**

| Error | Cause | Solution |
|---|---|---|
| Ink out | When one or more ink cartridges are almost empty, the printer enters the low-ink state and continues printing. When the cartridge is completely empty, the printer indicates an ink-out error and stops printing. | Install a new ink cartridge. |
| Paper out | If the printer fails to properly load paper, it indicates a paper-out error. | Load paper and press the Load/Eject button. |
| Paper jam | If the printer fails to properly eject paper, it indicates a paper jam. | Press the Load/Eject button. If this does not clear the error, remove the paper by hand. |
| No ink cartridge | If the printer detects that one of the ink cartridges is not installed, it indicates a no-ink-cartridge error. | Install a new ink cartridge. |
| Maintenance request | When the total amount of waste ink reaches the limit, the printer indicates a maintenance request and stops printing. | Replace the waste ink pads. |
| Fatal error | A carriage control or CG access error has occurred. | Turn off the Stylus Scan and turn it back on. If the error does not clear, service. |

**Table 3-4. Repair of the Printer Mechanis m**

| Symptom | Condition | Cause | Check Point | Solution |
|---|---|---|---|---|
| Abnormal pump mechanism operation | Abnormal PF motor operation when the power is turned on. | Foreign substances are loaded in the PF gears. | Manually drive the platen drive gear and check it if it rotates normally. | Remove any foreign substances. |
| | | The PF motor is defective. (Refer to Table5-1) | Check the inner coil resistance and see if there is any disconnection of the coil. | Replace the PF motor. |
| Ink is not absorbed or is poorly absorbed. | Used ink does not go through the waste ink tube. | The pump tube is crashed. | Check the tube visually. | Fix the crashed part by the airgun. |
| | | Capping rubber is damaged or deformed. | Check the capping rubber visually. | Replace the cap mechanism. |
| | | The tube is out of the cap. | Check if the tube is out of the cap visually. | Connect the tube properly. |
| | | Pump bulb is not closed at absorption. | Check the bulb operation visually. | Replace the cap mechanism. |
| Abnormal carriage operation. | Abnormal carriage operation at power on. | Foreign substance in the CR drive gear. | Check visually if there is any substances or not. | Remove any foreign substances. |
| | | CR motor is defective. | Check the inner coil resistance and see if there is any disconnection of the coil. | Replace the CR motor. |
| | Abnormal carriage operation during printing. | Carriage movement is not smooth. | Check whether the carriage moves smoothly when moved manually. | Clean and lubricate the carriage guide axis. |
| | | | Check tension of the timing belt. | Adjust tension mechanism or replace it. |
| | | | Check if there is any foreign substances in the carriage path. | Remove any foreign substances. |

**Table 3-4. Repair of the Printer Mechanism (cont.)**

| Symptom | Condition | Cause | Check Point | Solution |
|---|---|---|---|---|
| Printing is not performed. | The carriage moves, but no printing is performed. | Head FFC is out of connection. | Check if the head FFC on the board or carriage is connected surely. | Connect the FFC properly. |
| | | The FFC is disconnected inside. | Check the FFC by using a tester. | Replace the FFC. |
| | | I/C is defective. | Install a new I/C and perform the self-test. | Replace I/C. |
| | | Head unit is defective. | If the condition does not improve even after 2or 3 times cleaning operation, replace the head unit and perform the self-test. | Replace the head unit. |
| Abnormal printing | Only a particular dot causes abnormal printing. | Print head surface is not clean. (dot missing) | Perform the cleaning operation several times and check printing. | Perform the cleaning. |
| | | The head unit is defective. | Perform the cleaning operation several times and check printing. | If condition does not improve even after the cleaning, replace the head. |
| | | Capping absorber is touching the head surface. | Check the head absorber visually. | Replace the head absorber if it is deformed. |
| | A dot is not printed occasionally. | Print head surface is not clean. (dot-missing) | Perform the cleaning operation several times and check printing. | Perform the cleaning. |
| | | The head FFC is disconnected inside. | Check the FFC by using a tester. | Replace the head FFC. |
| | | The head FFC is out of connection. | Check if the head FFC on the board or carriage is connected surely. | Connect the FFC properly. |
| | | The head unit is detective. | Perform the cleaning operation several times and check printing. | If condition does not improve even after the cleaning, replace the head. |
| | | I/C is defective. | Install the new I/C and perform self-test. | Replace I/C. |
| | Black specks or dots. | The head FFC is out of connection. | Check if the head FFC on the board or carriage is connected surely. | Connect the FFC properly. |
| | | The head unit is detective. | Check connection with the head FFC. | Replace the head if there is no connection problem with the FFC. |

**Table 3-4. Repair of the Printer Mechanism (cont.)**

| Symptom | Condition | Cause | Check Point | Solution |
|---|---|---|---|---|
| Abnormal printing (continued) | A vertical line is not aligned. | Bi-directional alignment is not adjusted. | Perform Bi-D adjustment. | Refer to Chapter4. |
| | White line appears in the image data. | Head angle is not correct. | Perform head angle adjustment. | Refer to Chapter4. |
| | | Platen gap is not correct. | Perform platen gap adjustment. | Refer to Chapter4. |
| | | Dot shooting direction is tilted because head surface is not clean | Perform the cleaning operation several times and check printing. | Perform the cleaning operation. |
| | | I/C is defective. | Install a new I/C and perform the self-test. | Replace I/C. |
| | | Head unit is defective. | Perform the cleaning operation several times and check printing. | Replace the head unit. |
| Abnormal paper feeding. | Paper is not fed. | Friction of the PF roller. | Check if the PF roller rotates when paper is not fed. | Clean the PF roller by the cleaning sheet. Replace the PF roller if it does not recover. |
| | | Abnormal operation of the hopper. | Check movement of the ASF hopper visually. | Replace ASF. |
| | | Malfunction of ASF drive change-over. | Check if the ASF gear rotates visually. | Replace gears of the ASF drive change-over. |
| | | Friction of the PF roller. | Check if the PF roller slips during paper feeding. | Clean the PF roller by the cleaning sheet. Replace the PF roller if it does not recover. |

**Table 3-4. Repair of the Printer Mechanism (cont.)**

| Symptom | Condition | Cause | Check Point | Solution |
|---|---|---|---|---|
| Printer stops during initialization. | Fatal error appears. | ASF sensor is defective. | Check the signal level of the ASF sensor. (Refer to Table 5-2) | Replace ASF sensor. |
| | | PE sensor is defective. | Check the signal level of the PE sensor. (Refer to Table 5-2) | Replace PE sensor. |
| | | HP sensor is defective. | Check the signal level of the HP sensor. (Refer to Table 5-2.) | |
| | | Head FFC is disconnected. | Check if the head FFC is connected. | Connect the head FFC. |
| | | CR motor is defective. | Check the CR motor cable is connected. | Replace the CR motor if there is no problem in the cable connection. |
| | | PF motor is defective. | Check if the PF motor cable is connected. | Replace the PF motor if there is no problem in the cable connection. |

## 3.3 Scanner Troubleshooting

This section describes troubleshooting from the abnormal phenomenon. You can isolate the faulty unit based on the abnormal phenomenon. See Table 3-6, "Service Level Troubleshooting Starts Here," on page 69 to find the closest phenomenon and the corresponding table to refer to.

**Table 3-5. User-level Scanner-Specific errors**

| Error | Cause | Solution |
|---|---|---|
| Fatal error | • The lamp is broken.<br>• Stylus Scan turned on before the transportation screw was removed.<br>• System breakdown. | Turn off the Stylus Scan and turn it back on. If the error does not clear, service.<br>(Disposition)<br>Turn off the lamp and stop operation. Set bit 7 of the status byte. |
| ADF paper jam | ADF fails to eject the document. | After removing the document, turn the Stylus Scan off and back on, or send the ESC @ command.<br>Parallel I/F init: active pulse<br>(Disposition)<br>Turn off the lamp and stop operation. Set bit 7 of the status byte. |
| Command error | Unidentified command detected.<br>(Disposition)<br>The scanner sent a NACK signal and is waiting for the next command. If an incorrect command or parameter is received, it is disregarded and the previous value is maintained. | Send a correct command to clear the error. |
| ADF cover open | ADF cover open | Close the cover. |
| Maintenance cover open | Maintenance cover open | Close the cover. |

**Table 3-6. Service Level Troubleshooting Starts Here**

| Phenomenon | Description | Ref, Table |
|---|---|---|
| Scanner does not operate with power on. | • The Operate light on the control panel does not come on.<br>• Scanner does not operate the initialization. | Table 3-7<br>Table 3-8 |
| Fatal Error occurs and is not cleared after turning off and back on the scanner. | • Carriage unit does not operate.<br>• Carriage unit crashes into the frame, and an error is indicated.<br>• The lamp does not light up. | Table 3-9<br>Table 3-10<br>Table 3-11 |
| Scanned image is unclear. | --- | Table 3-12 |
| "Interface Error" is indicated. | • SCSI Interface Error<br>• USB Interface Error | Table 3-13<br>Table 3-14 |
| "Option Error" occurs.<br>Optional unit(ADF/TPU) do not operate. | • Optional unit does not operate correctly. | Table 3-15 |

**Table 3-7. Power problems**

| Cause | Step | Checkpoint | Finding | Solution |
|---|---|---|---|---|
| Connector CN1 on the power board is disconnected. | 1 | Is the connector CN1 on the power board disconnected? | Yes | Connect CN1 properly. |
| Connector CN1 or CN2 on the power board disconnected. | 2 | Is the connector CN1 or CN2 on the power board disconnected? | Yes | Connect CN1 or 2 properly. |
| Fuse on the power board has blown out. | 3 | Has the fuse on the power board blown out? | Yes | Replace the fuse. |

**Table 3-7. Power problems (cont.)**

| Cause | Step | Checkpoint | Finding | Solution |
|---|---|---|---|---|
| The power board.is broken. | 4 | With the scanner On, check the voltage output level between pins 8/9(+) and pins 6/7(-) on the power board. Is the voltage +5VDC? | No | Replace the power board. |
| Connector CN4 on the power board is disconnected. | 5 | Is the connector CN4 on the control board disconnected? | Yes | Connect CN4 properly. |
| The control board is broken. | 6 | --- | --- | Replace the control board. |

**Table 3-8. Scanner does not initialize**

| Cause | Step | Checkpoint | Finding | Solution |
|---|---|---|---|---|
| Connector CN1 on the power board is disconnected. | 1 | Is the connector CN1 on the power board disconnected? | Yes | Connect CN1 properly. |

**Table 3-9. Carriage Unit does not operate**

| Cause | Step | Checkpoint | Finding | Solution |
|---|---|---|---|---|
| Power board is broken. | 1 | With the scanner power on, check the voltage output level between the Pins 4/5(+) and Pins 6/7 (-) for CN101 on the power board. Is it +24VDC? | No | Replace the power board. |
| Carriage Unit (or CR move mechanism) is broken. | 2 | • With the scanner upper case removed, does CR motor move?<br>• With the CR motor removed, does the carriage unit move smoothly? | No | Check the carriage move mechanism and replace the corresponding parts or disassemble and assemble the part. |

**Table 3-9. Carriage Unit does not operate (cont.)**

| Cause | Step | Checkpoint | Finding | Solution |
|---|---|---|---|---|
| CR Motor is broken | 3 | Disconnect the connector CN6 on the control board, then using the tester, check the coil resistance between Pin2 and 4 and between Pin1 and 3. Is the resistance of 2 points about 6.2Ω? | No | Replace the CR motor. |
| | | If any motor coil is shorted, check the CR motor drive circuit in the order below.<br>1.)Set the tester on Ohms.<br>2.)Place the (-) lead of the tester on any of Pins 1,2, 3 or 4 for CN1 on the control hoard.<br>3.)Place the (+) lead of the tester on Pin 6/7 for CN4 on the control board.<br>With the scanner off, does the meter show "∞"? | No | Replace the power board. |
| Control board is broken. | 4 | --- | --- | Replace the control board. |

**Table 3-10. Carriage unit crashes into frame**

| Cause | Step | Checkpoint | Finding | Solution |
|---|---|---|---|---|
| CR home position sensor is broken. | 1 | Check the signal level.<br>• Check the signal/status level between C(+) and E(-) for PC2.<br>H(about 4.5V)/ when PC1-PC2 is closed.<br>L(0.3V)/when PC1 -PC2 is opened. | -- | Replace the CR home position sensor(PC1/PC2) on the control board. |

**Table 3-11. The lamp does not light up.**

| Cause | Step | Checkpoint | Finding | Solution |
|---|---|---|---|---|
| Connector CN5 on the control board is disconnected. | 1 | Is the connector CN5 on the control board disconnected? | Yes | Connect CN5 properly. |
| Connector CN1 or CN2 on the CCD board disconnected. | 2 | Is the connector CN1 or CN2 on the CCD board disconnected? | Yes | Connect CN1 or 2 properly. |
| Lamp is not connected properly on the inverter board. | 3 | Is the lamp connected properly on the inverter board? | No | Connect the lamp properly. |
| Lamp is broken. | 4 | Does the lamp light after it is replaced? | Yes | Replace the lamp. |
| Inverter board is broken. | 5 | Does it operate properly after replacing it? | Yes | Replace the inverter board. |
| Control board is broken. | 6 | --- | --- | Replace the control board. |

### Table 3-12. Poor image quality

| Cause | Step | Checkpoint | Finding | Solution |
|---|---|---|---|---|
| Mirror in the carriage unit is dirty. | 1 | Is the image scanned clearly after cleaning the mirror? | No | Clean the lamp surface. |
| CCD sensor board is broken. | 2 | --- | -- | Replace the CCD board. |
| Control board is broken. | 3 | --- | --- | Replace the control board. |

### Table 3-13. SCSI Interface Error

| Cause | Step | Checkpoint | Finding | Solution |
|---|---|---|---|---|
| Terminator switch is set wrong. | 1 | Check the user's guide for the correct setting. Is the setting correct? | No | Set the terminator correctly. |
| SCSI setting is wrong. | 2 | Check the user's guide for the correct setting. Is the setting correct? | No | Set the SCSI correctly. |
| SCSI cable is defective. | 3 | Replace the SCSI cable. Is the operation normal? | Yes | Replace the SCSI cable. |
| Control board is broken. | 4 | --- | --- | Replace the control board. |

### Table 3-14. Parallel Interface Error

| Cause | Step | Checkpoint | Finding | Solution |
|---|---|---|---|---|
| Host and O/S (Windows95/98) does not support the USB. | 1 | On the Windows, go to "My Computer"→"Property"→"Device Manager", then, check if "Universal serial bus controller" is effective. | No | Replace the host. |
| USB cable is broken. | 2 | Replace the USB cable. Is the operation normal? | Yes | Replace the USB cable. |
| Control board is broken. | 3 | --- | --- | Replace the control board. |

### Table 3-15. Option unit malfunction

| Cause | Step | Checkpoint | Finding | Solution |
|---|---|---|---|---|
| The cable of the optional unit is disconnected. | 1 | Is the connector CN1 on the control board disconnected? | Yes | Connect the CN1 properly. |
| Control board is broken. | 2 | --- | --- | Replace the control board. |
| Optional unit is broken. | 3 | +24V line:Lamp, Motor<br>+5V line:Sensor, logic circuit. | --- | Replace the defective part of the optional unit. |

# 3.4 Troubleshooting Motors and Sensors

**Table 3-16. Motor Resistance and Measurement Procedure**

| Motor Name | Location | Check Point | Resistance |
|---|---|---|---|
| CR Motor | CN7 (MAIN board *) | Pins 1 & 3,<br>Pins 2 & 4 | 7.8 Ohms ± 10% |
| PF (Pump) Motor | CN8 (MAIN board *) | Pins 1 & 3,<br>Pins 2 & 4 | 7.8 Ohms ± 10% |

**Table 3-17. Sensor Check**

| Sensor Name | Location | Signal Level | Sensor Status |
|---|---|---|---|
| Paper End Sensor | CN5/Pins 1 & 2 | Close: more than 2.4V | No paper |
| Carriage Home Position Sensor | CN4/ Pins 1 & 2 | Close: more than 2.4V | Out of home position |
| ASF HP Sensor | CN6/ Pins 1 & 2 | Close: more than 2.4V | Out of home position |
| Black Cartridge Sensor | CN9/Pins 1 & 19 | Off: more than 2.4V | Black cartridge installed |
| Color Cartridge Sensor | CN9/Pins *2 & 19* | Off: more than 2.4V | Color cartridge installed |
| Thermistor | CN9/ Pins *2 & 19* | Analog data | Change the VH voltage of charge pulse for common driver circuit |

CHAPTER

4

# DISASSEMBLY & ASSEMBLY

# 4.1 Overview

This chapter describes procedures for disassembling the main components of the EPSON Stylus Scan 2500. Unless otherwise specified, disassembly units or components can be reassembled by reversing the disassembly procedure. Therefore, no specific assembly procedures are included in this chapter, but special points regarding re-assembly are given under the heading "CHECK POINT". Any adjustments required after disassembling the units are described under the heading "REQUIRED ADJUSTMENT".

## 4.1.1 Precautions for Disassembling the Printer

See the precautions given under the headings "WARNING" and "CAUTION" below, before disassembling or assembling the EPSON Stylus Scan 2500.

- **Disconnect the power cable before disassembling or assembling the printer.**
- **Wear protective goggles to protect your eyes from ink. If ink gets in your eye, flush the eye with fresh water and see a doctor immediately.**
- **If ink comes into contact with your skin, wash it off with soap and water. If irritation occurs, contact a physician.**
- **A lithium battery is installed on the MAIN Board of this printer. Be sure to observe the following instructions when servicing the battery:**
  - Keep the battery away from any metal or other batteries so that electrodes of the opposite polarity do not come in contact with each other.
  - Do not heat the battery or put it near fire.
  - Do not solder on any part of the battery. (Doing so may result in leakage of electrolyte from the battery, burning or explosion. The leakage may affect other devices close to the battery.)
  - Do not charge the battery. (An explosion may be generated inside the battery, and cause burning or explosion.)
  - Do not dismantle the battery. (The gas inside the battery may hurt your throat. Leakage, burning or explosion may also be resulted.)
  - Do not install the battery in the wrong direction. (This may cause burning or explosion.)

**Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacture. Dispose the used batteries according to government's law and regulations.**

**Risque d'explosion si la pile est remplacée incorrectment. Ne remplacer que par une pile du même type ou d'un type équivalent recommandé par le fabricant. Eliminer les piles déchargées selon les lois et les règles de sécurité en vigueur.**

- **Never remove the ink cartridge from the carriage unless this manual specifies to do so.**
- **When transporting the printer after installing the ink cartridge, be sure to pack the printer for transportation without removing the ink cartridge.**
- **Use only recommended tools for disassembling, assembling or adjusting the printer.**
- **Apply lubricants and adhesives as specified. (See Chapter 6 for details.)**
- **Make the specified adjustments when you disassemble the printer. (See Chapter 5 for details.)**
- **When assembling, if an ink cartridge is removed and needs to be installed again, be sure to install a new ink cartridge because of the following reasons;**
  - Once the ink cartridge mounted on the printer is removed, air comes into and creates bubbles in the cartridge. These bubbles clog ink path and cause printing malfunction.
  - If an ink cartridge in use is removed and is reinstalled, ink quantity will not be detected correctly since the counter to check ink consumption is cleared.
- **For the above reasons, make sure to return the printer to the user with a new ink cartridge installed.**

## 4.1.2 Tools

Table 4-1 lists the tools recommended for disassembling, assembling, or adjusting the printer. Use only tools that meet these specifications.

**Table 4-1. Tool List**

| Tools | Commercially Available | Code |
|---|---|---|
| (+) Driver No.2 | yes | B743800200 |
| (+) Driver No.1 | yes | B743800400 |
| Tweezers | yes | B741000100 |
| Hexagon Box Driver (Opposite side: 5.5mm) | yes | B741700100 |
| M3 (5.5mm) wrench | yes | - |
| Pliers | yes | - |
| Acetate tape | yes | - |

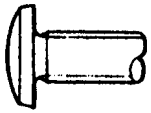
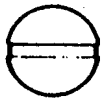
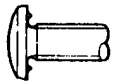
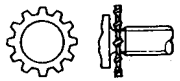
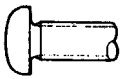
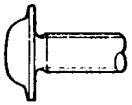
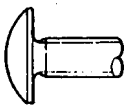
## 4.1.3 Specification for Screws

Table 4-2 shows screw specifications. During assembly and disassembly, make sure that the specified types of screws are used at proper locations, referring to the table below. Note that the screw numbers described in the manual correspond to the numbers in the table.

**Table 4-2. Screw Characteristics**

| Name | Size |
|---|---|
| +Bind, S-tight (CBS) | 3X6 |
| +Bind, S-tight | 3X10 |
| +Bind, P-tight (CBP) | 3X6 |
| +Bind, P-tight | 3X10 |
| +Bind, P-tight | 3X8 |
| +Pan head (CP) | 3X4 |
| +Bind, S-tight, Sems R2 (CBS Sems) | 3X6 |

**Table 4-3. Screw Types and Abbreviations**

| Head | | Body | Washer (assembled) |
|---|---|---|---|
| Top | Side | | |
| 1. Cross-recessed head | 1. Bind  | 1. Normal | 1. Plain washer |
| 2. Slotted head  |  (with Notch) | 2. S-tight | 2. Outside toothed lock washer  |
| | 2. Pan  | 3. P-tight | 3. Spring washer |
| | 3. Cup/flange  | 4. Tapping | |
| | 4. Truss  | | |

## 4.1.4 Service Checks After Repair

Before returning the printer after servicing, use the check list below, which enables you to keep record of servicing and shipping more efficiently.

**Table 4-4. Inspection Checklist for the Stylus Scan**

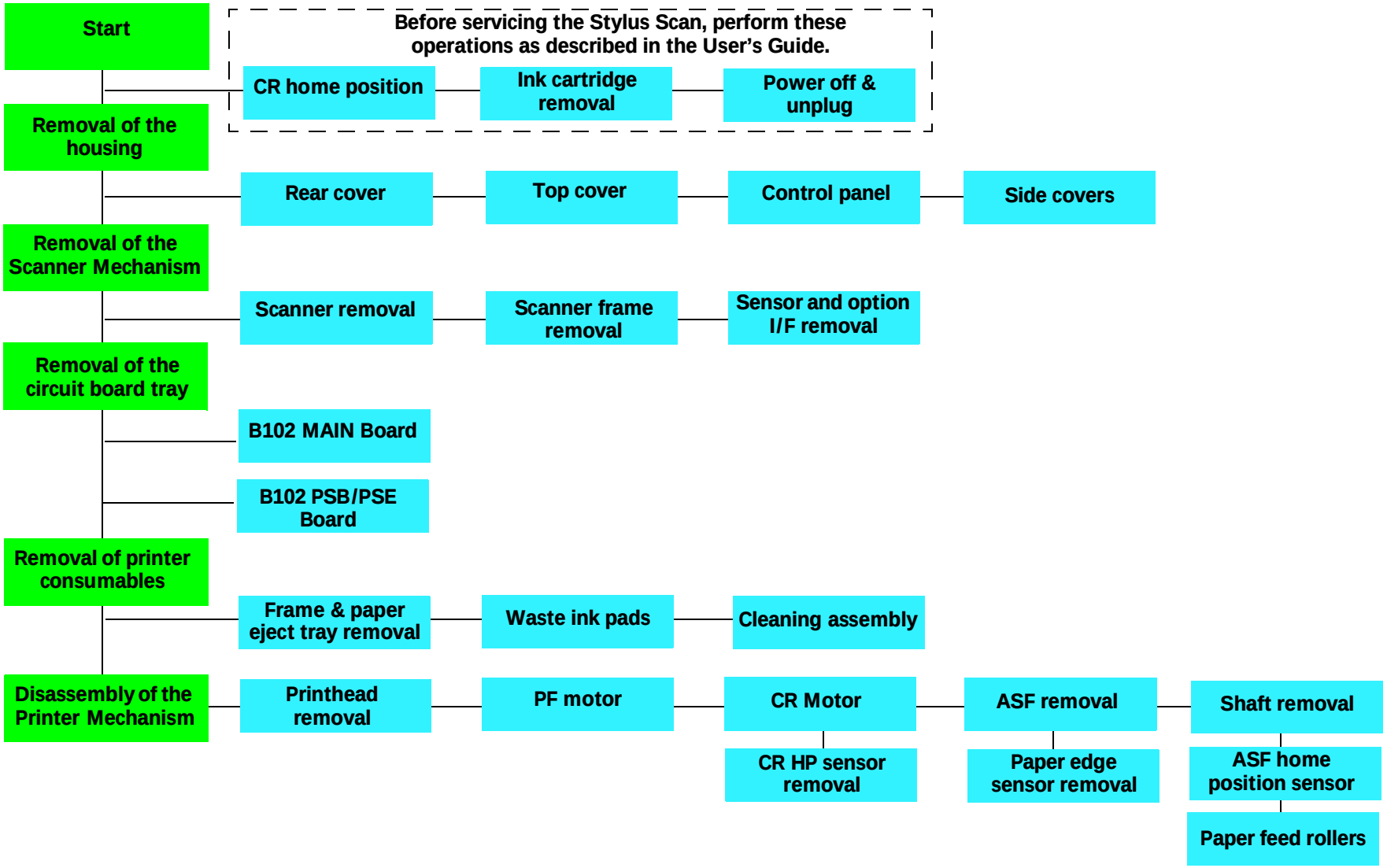
| Category | Component | Item to check | Is Check Required? |
|---|---|---|---|
| Printer units | Self-test | Is the operation normal? | ☐Checked / ☐Not necessary |
| | On-line test | Was the on-line test successful? | ☐Checked / ☐Not necessary |
| | Print head | Is ink ejected normally from all nozzles? | ☐Checked / ☐Not necessary |
| | Carriage mechanism | Does the carriage move smoothly? | ☐Checked / ☐Not necessary |
| | | Any abnormal noise during movement? | ☐Checked / ☐Not necessary |
| | | Any dirt or obstacles around the shaft of gear cover? | ☐Checked / ☐Not necessary |
| | | Is the CR motor at the correct temperature (not over heating)? | ☐Checked / ☐Not necessary |
| | Paper feeding mechanism | Is paper fed smoothly? | ☐Checked / ☐Not necessary |
| | | Does paper get jammed? | ☐Checked / ☐Not necessary |
| | | Does paper get skew during paper feeding? | ☐Checked / ☐Not necessary |
| | | Are papers multi fed? | ☐Checked / ☐Not necessary |
| | | Does the PF motor get overheated? | ☐Checked / ☐Not necessary |
| | | Abnormal noise during paper feeding? | ☐Checked / ☐Not necessary |
| | | Is the paper path clear of all obstructions? | ☐Checked / ☐Not necessary |

**Table 4-4. Inspection Checklist for the Stylus Scan**

| Category | Component | Item to check | Is Check Required? |
|---|---|---|---|
| Scanner unit | Mechanism | Is the glass surface clean? | ☐Checked / ☐Not necessary |
| | | Does paper skew during loading or feeding | ☐Checked / ☐Not necessary |
| | | Any abnormal noise during movement? | ☐Checked / ☐Not necessary |
| | Carriage mechanism | Does the carriage move smoothly? | ☐Checked / ☐Not necessary |
| | | Any abnormal noise during movement? | ☐Checked / ☐Not necessary |
| | | Any dirt or obstacles around the shaft of gear cover? | ☐Checked / ☐Not necessary |
| | | Is the CR motor at the correct temperature (not over heating)? | ☐Checked / ☐Not necessary |
| | Lamp | Does the lamp turn on and successfully perform white-reflective test near home position? | ☐Checked / ☐Not necessary |
| Adjustment | Specified adjustment items | Are adjusted conditions all right? | ☐Checked / ☐Not necessary |
| Lubricant | Specified lubricated item | Is lubrication applied to the specified locations? | ☐Checked / ☐Not necessary |
| | | Is the quantity of lubrication adequate? | ☐Checked / ☐Not necessary |
| Function | Printer ROM version | Newest version: | ☐Checked / ☐Not necessary |
| | Scanner ROM version | Newest version: | ☐Checked / ☐Not necessary |
| Shipping | Ink cartridges | Are the ink cartridges installed correctly? | ☐Checked / ☐Not necessary |
| | Pads on bottom | Are all five pads attached to the bottom? | ☐Checked / ☐Not necessary |
| | Protection conditions during transport | Are all the pointed parts firmly fixed? | ☐Checked / ☐Not necessary |
| Others | Attached items | Are all attached items from users included? | ☐Checked / ☐Not necessary |

## 4.2 Disassembly Procedures

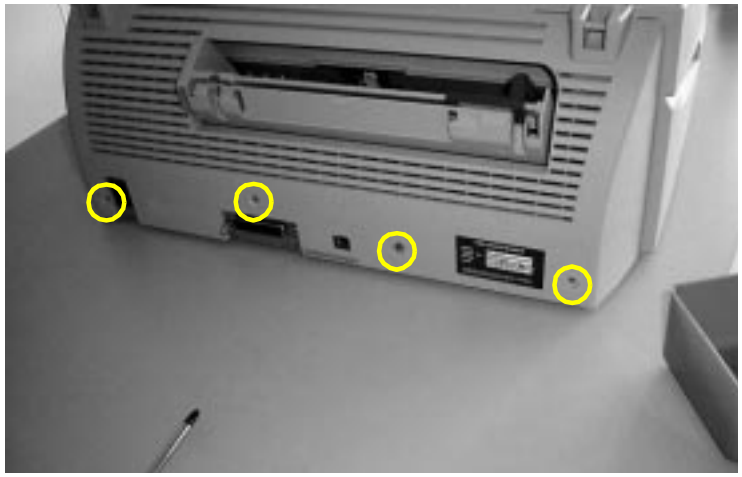
The flowchart below shows procedures for disassembly.



# 4.3 Removing the Housing

## 4.3.1 Removing the rear cover

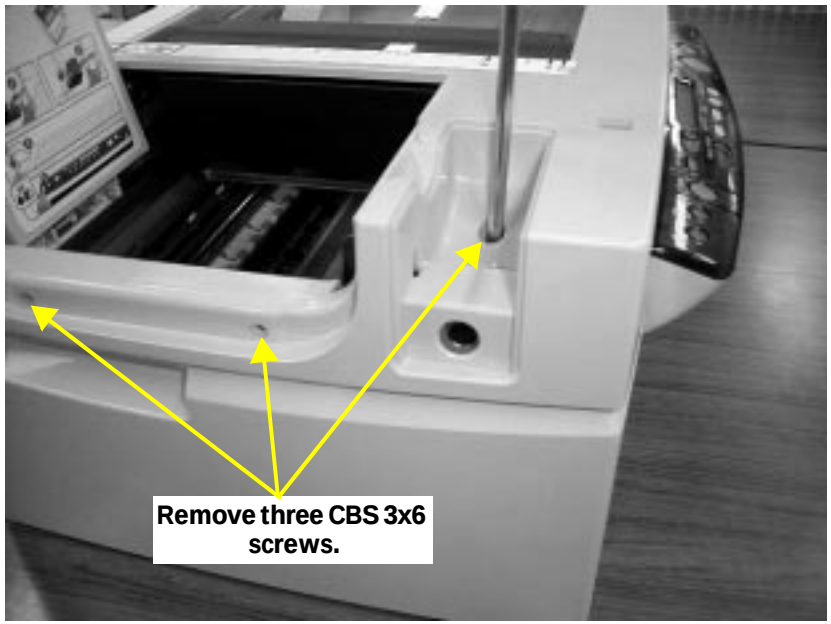
1. Remove the paper stacker.
2. Remove four (CBS 3x6) screws.



3. Pull out the rear cover from the bottom.

### 4.3.2 Removing the top cover

1. Remove the rear cover as described above.
2. Remove the Document cover, the Maintenance cover, and the optional interface cover.
3. Move the scanner mechanism towards the middle of the Stylus Scan.
4. Remove three screws




5. Lift the top cover from the screw-side and slide it away from you so that the hooks clear the frame on the opposite side.

### 4.3.3 Removing the control panel assembly

The control panel assembly is replaced as one piece; there is no board-level repair.

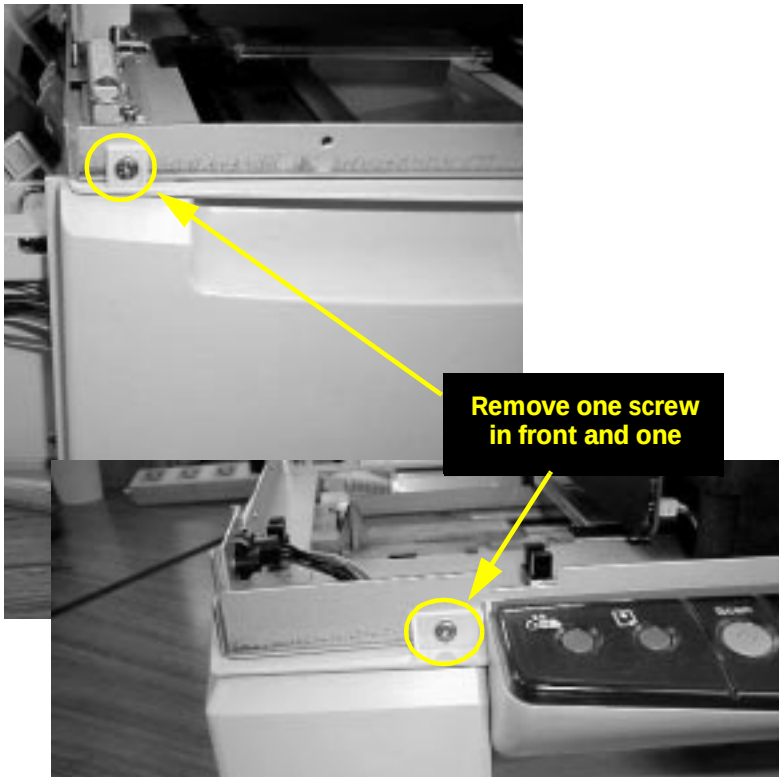
1. Remove the rear cover and top cover as described in the two previous sections.
2. Remove two screws (CBS 3x10) and slightly pull out the control panel assembly.
3. Remove the FFC.

CAUTION

**When re-inserting the FFC into the control panel board connector, make sure the FFC is fully inserted but do not use too much force.**
**Also, the connector is difficult to see properly so it is easy to scrape or peel off the connecting strips at the end of the FFC. You need to check the strips at the end of the FFC for wear, folds, and tears every time you remove the FFC.**

## 4.3.4 Removing the side covers

1. Remove the rear and top covers as described in “Removing the rear cover” on page 82 and “Removing the top cover” on page 83.
2. Remove two screws (CBS 3x6) securing the left-side cover and remove the cover by pulling out and up from the top.




CAUTION

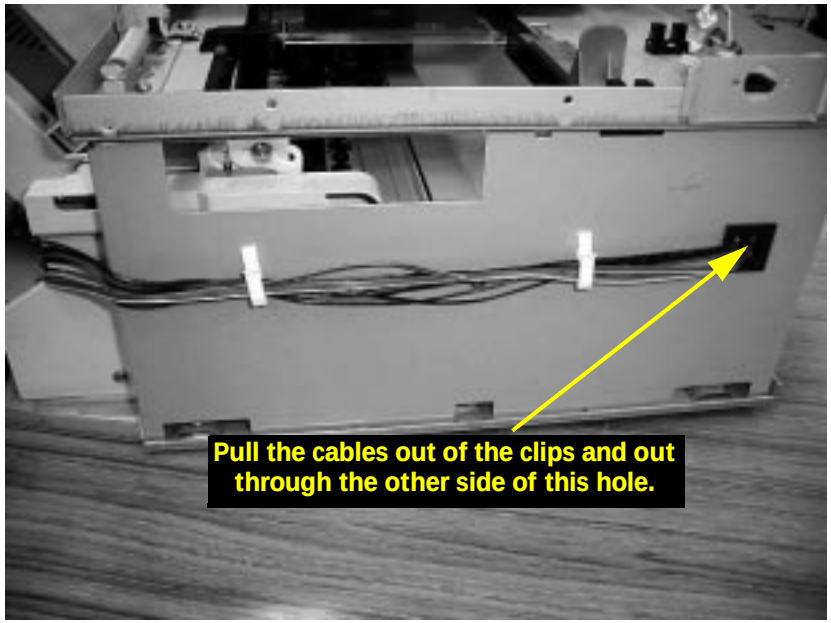
**Be very careful when removing or replacing the side covers. The hooks at the bottom are precisely positioned, and forcing them in or out can easily break them.**

3. Repeat this process for the right-side cover after removing the paper-thickness lever handle (blue).

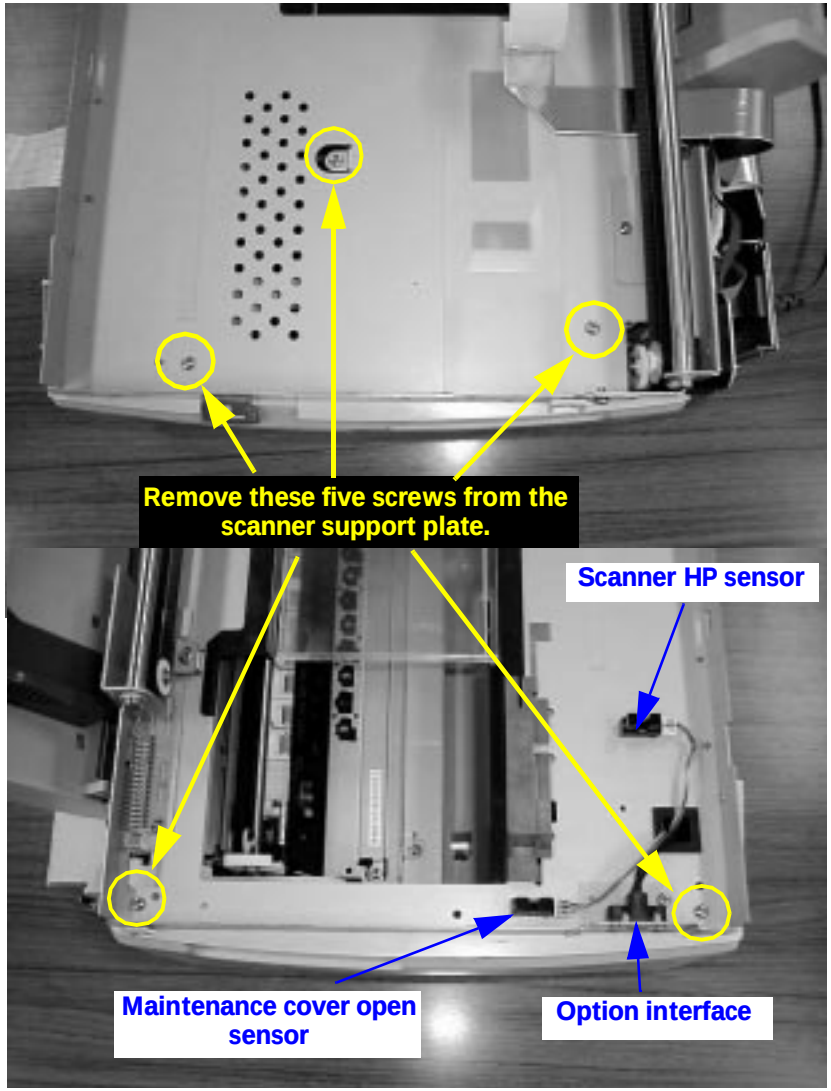
## 4.3.5 Removing the scanner support frame

To access the printer mechanism, printer motors, waste ink pads, or the B102 Power Supply board, you need to remove the scanner support frame. You only need to remove the scanner from the scanner support frame when servicing the scanner mechanism.

1. Remove the rear cover and top cover as described in “Removing the Housing” on page 82.
2. Pull out the circuit board tray as described in “Removal of the Circuit Board Tray” on pag e90, and remove the scanner FFC (CN14). Also remove the CN11, CN12, and CN15 connectors.
3. Remove the side covers as described in “Removing the side covers” on page 84.
4. On the left side of the Stylus Scan pull the Scanner HP sensor cable, Maintenance-cover-open cable, and Option-interface cable through the clips and hole in the left-side frame.



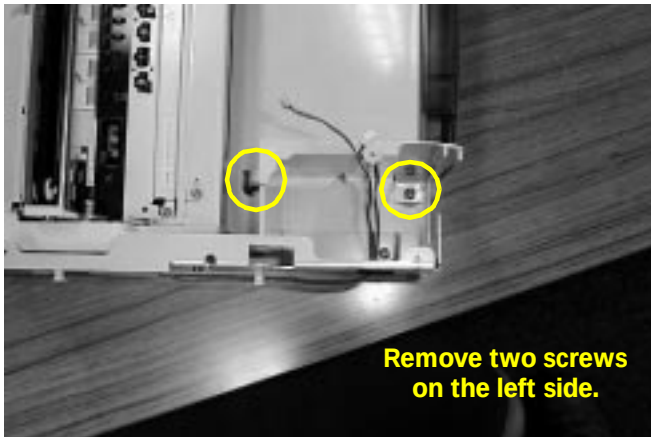
5. Remove five screws (CBS 3x6) securing the scanner support frame to the printer mechanism frame, and remove the scanner support frame.


Remove these five screws from the scanner support plate.
Scanner HP sensor
Maintenance cover open sensor
Option interface

## 4.3.6 Removing the paper eject assembly

scanner mechanism.

1. Remove the rear cover and top cover as described in “Removing the Housing” on page 82.
2. Remove the side covers as described in “Removing the side covers” on page 84.
3. Remove the scanner support frame as described in “Removing the scanner support frame” on pag e84.
4. Remove three screws (CBS 4x6)

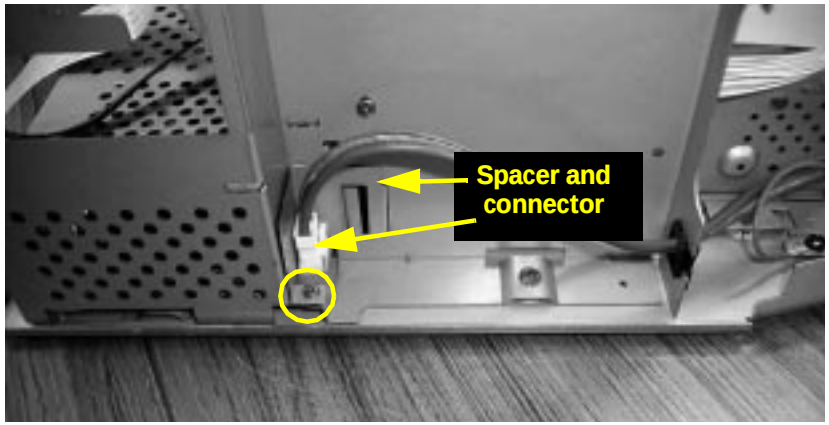



***NOTE:*** *The picture above shows the scanner home-position sensor and maintenance cover open sensor cables still attached to the left side frame. You can either leave them as shown above or remove them along with the option connector cable as describe in attached to the side frame in "Removing the scanner support frame" on pag e84.*

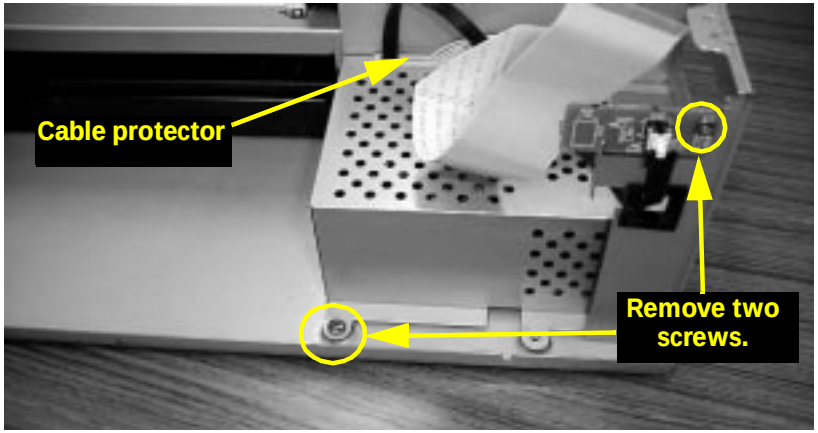
5. Carefully remove the paper eject assembly to avoid scratching the surface on any of the metal parts.

## 4.3.7 Removing the power supply board upper frame

1. Remove the rear cover and top cover as described in "Removing the Housing" on page 82.
2. Remove the side covers as described in "Removing the side covers" on page 84.
3. Remove the scanner support frame as described in "Removing the scanner support frame" on pag e84.
4. Remove one connector for the AC cable, and one screw (CBS 3x6) and one spacer.



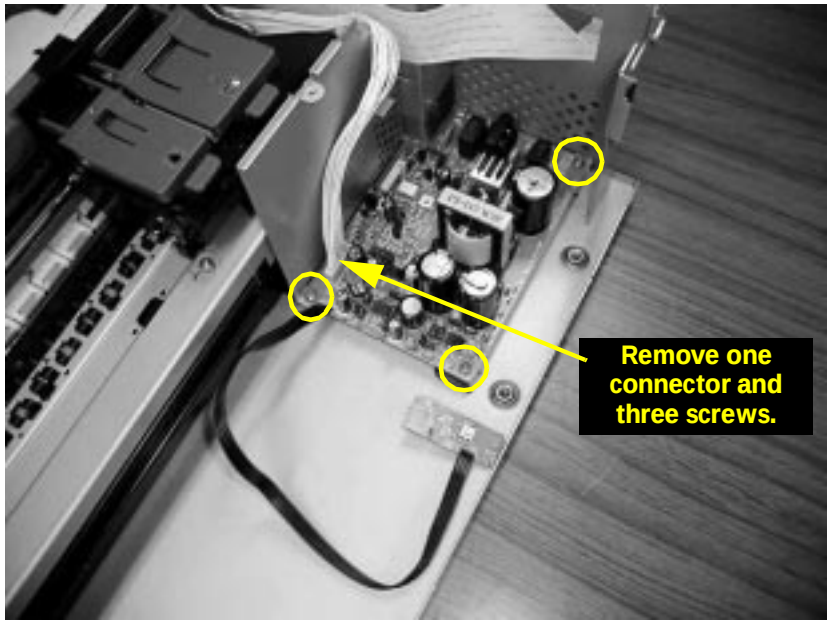
5. Remove one screw (CBS 3x6) securing the power-button board and one screw (CBS 4x6) securing the upper frame..




6. Pull the upper frame a little to the center and front of the Stylus Scan. Remove the cable protector and cables. Remove the power board frame.

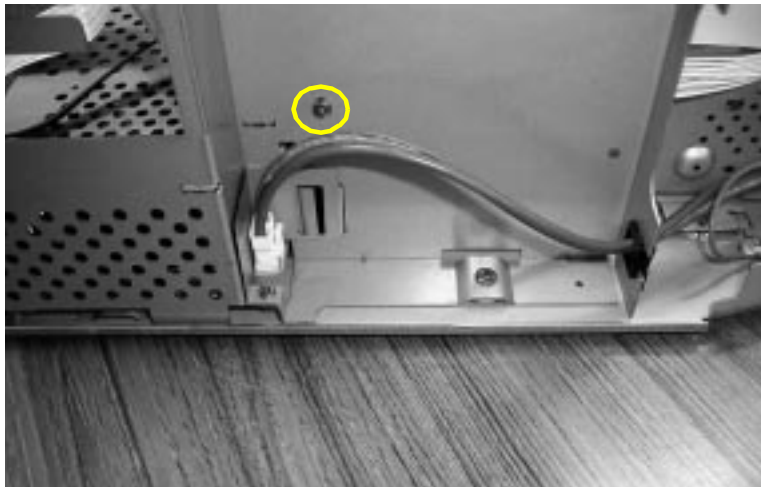
## 4.3.8 Removal of the B102 PSB/PSE Board

1. Remove the rear cover and top cover as described in “Removing the Housing” on page 82.
2. Remove the side covers as described in “Removing the side covers” on page 84.
3. Remove the scanner support frame as described in “Removing the scanner support frame” on pag e84.
4. Remove the paper eject assembly as described in “Removing the paper eject assembly” on page 85.
5. Remove the power supply board upper frame as described in “Removing the power supply board upper frame” on page 86.
6. Disconnect the power cable leading to the B102 MAIN board, and remove three screws (CBS 3x6).

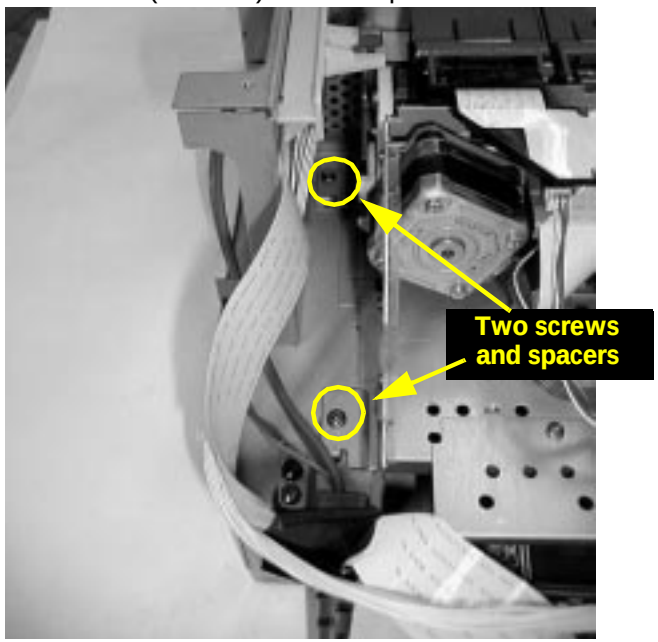


## 4.3.9 Removing the printer mechanism

1. Remove the rear cover and top cover as described in “Removing the Housing” on pag e82.
2. Remove the side covers as described in “Removing the side covers” on page 84.
3. Remove one screw (CBS 3x6) from the right-side frame.



4. Remove two screws (CBS 4x6) and two spacers.

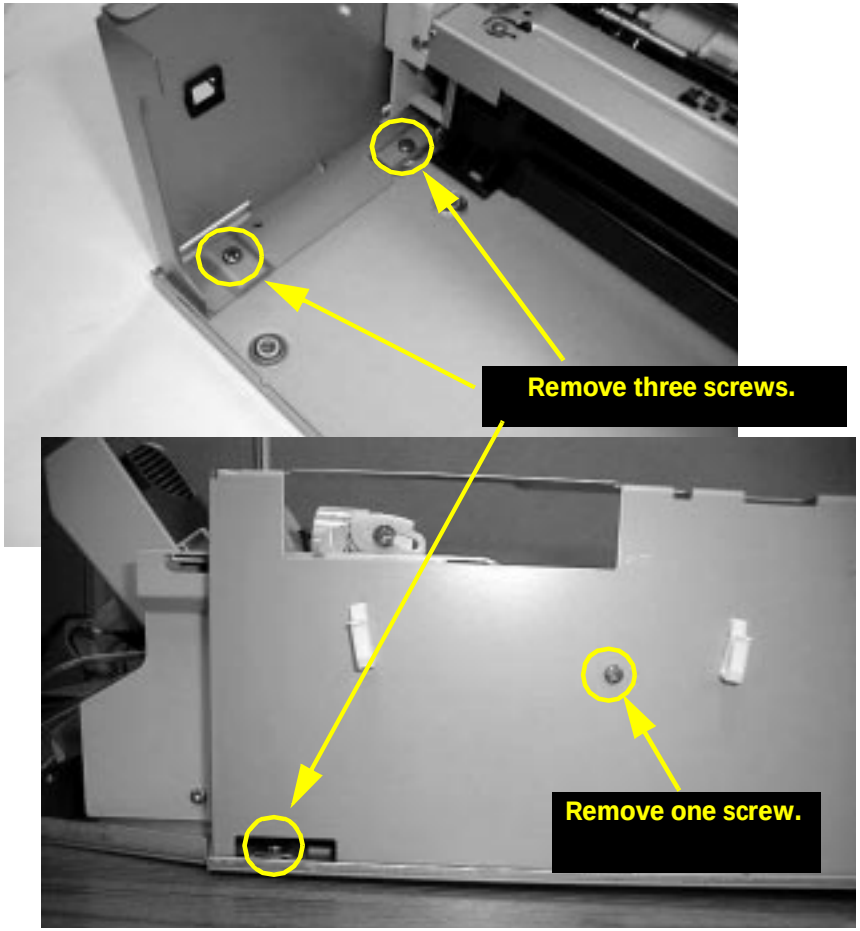



***NOTE:***

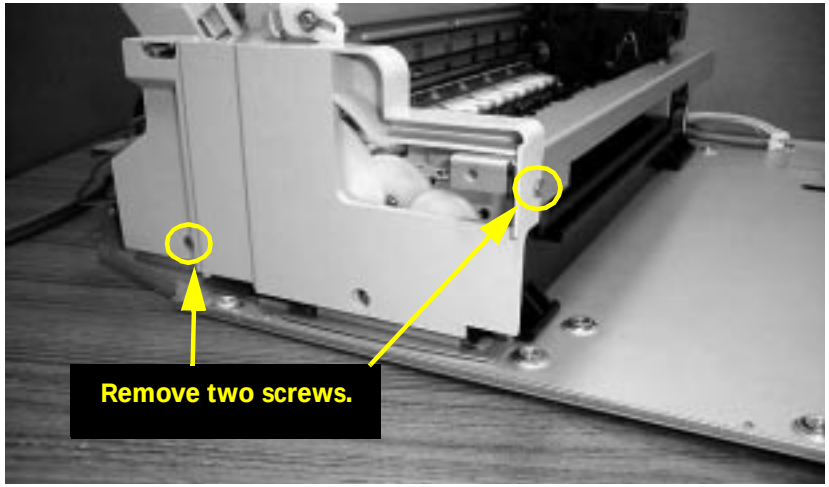
CHECK POINT

- **As shown in the above photos, you do not have to remove the scanner frame or right-side frame to remove the printer mechansim.**
- **When replacing the printer, you need to be careful about 1) the printer position on the base and 2) the spacer edge must be parallel to the printer frame.**

5. Remove three screws (CBS 4x6) and one screw (CBS 3x6).



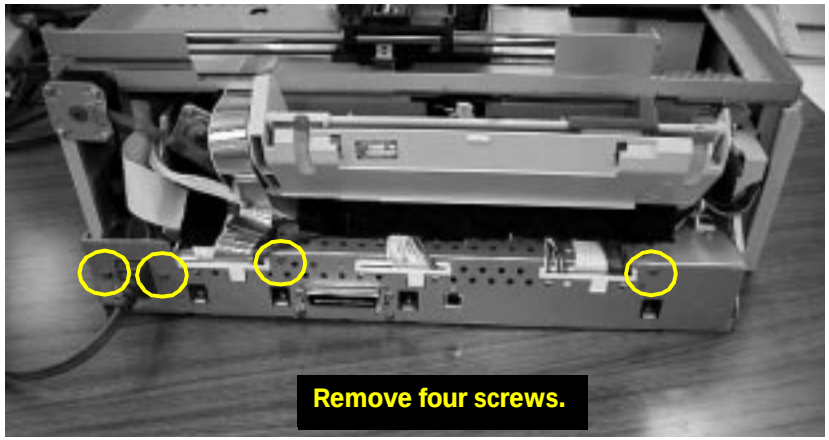

6. Remove two screws (CBS 3x6) and lift the side panel from the bottom to finally see the bare, naked printer mechanism.



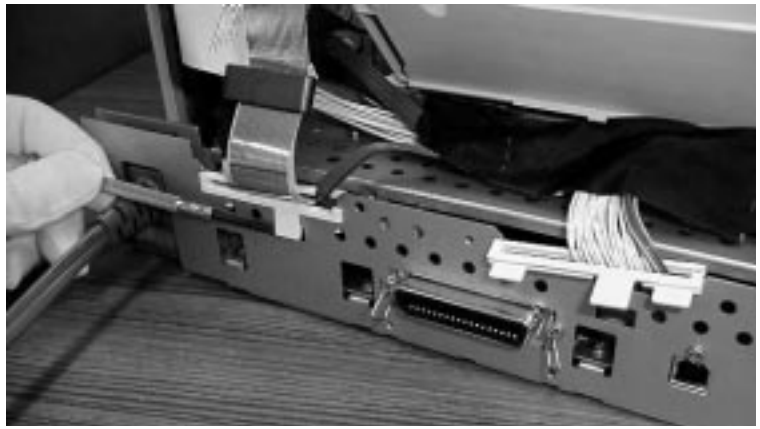
## 4.4 Removal of the Circuit Board Tray

Unlike the Stylus Scan 2000, the 2500 contains only the B102 MAIN board in the circuit board tray. See Section 4.7.1.2 for details on removing the B102 PSB/PSE board.

1. Remove the rear cover as described in "Removing the rear cover" on page 82.
2. Remove four CBS 3x6 screws securing the circuit board tray.




3. Pull out the tray slightly, and using a flat-tip screwdriver unhook the cable-protector clip hooks from the tray. Remove the clips from the tray.



CAUTION

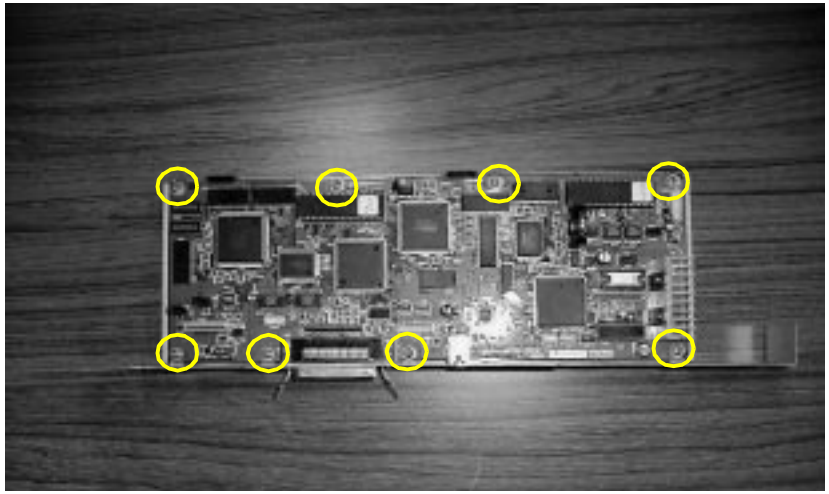
**The plastic cable protectors are held in place when the tray is shut, but they can easily break or chip when removing or replacing the tray. Be careful not to twist or force the protectors.**

CHECK POINT

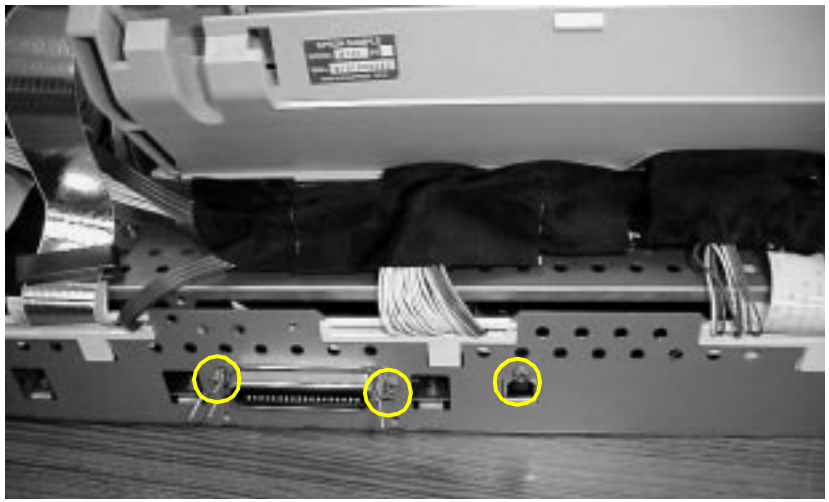
**When replacing the cables in the protectors, keep in mind that the protectors must be fully inserted so that the hooks properly attach to the tray.**
**Also, the protectors slide halfway under the printer mechanism frame. If the protectors are not fully inserted under the frame, there will be a gap between the frame and the top edge of the circuit board tray.**

4. Remove ten connectors and three FFCs as follows.
   - To the scanner: CN14, CN11, CN12, CN13
   - To the control panel: CN2
   - To the Power Supply board: CN10
   - To the printer: CN4, CN5, CN6, CN7, CN8, CN9
   - To the option interface: CN15
5. To remove the B102 MAIN board, remove

- eight CBS 3x6 screws securing the board to the bottom of the tray



- three CP 3x6 screws securing the connector interfaces.



6. Remove the circuit board.

## 4.5 Removal of the Printer Consumables

## 4.5.1 Removing the waste ink pads

1. Remove the rear cover and top cover as described in “Removing the Housing” on pag e82.
2. Remove the scanner support frame as described in “Removal of the Circuit Board Tray” on page 90.
3. Remove one screw (CBP 3x8) that secures the waste ink tank and is located on the right side of the printer mechanism.

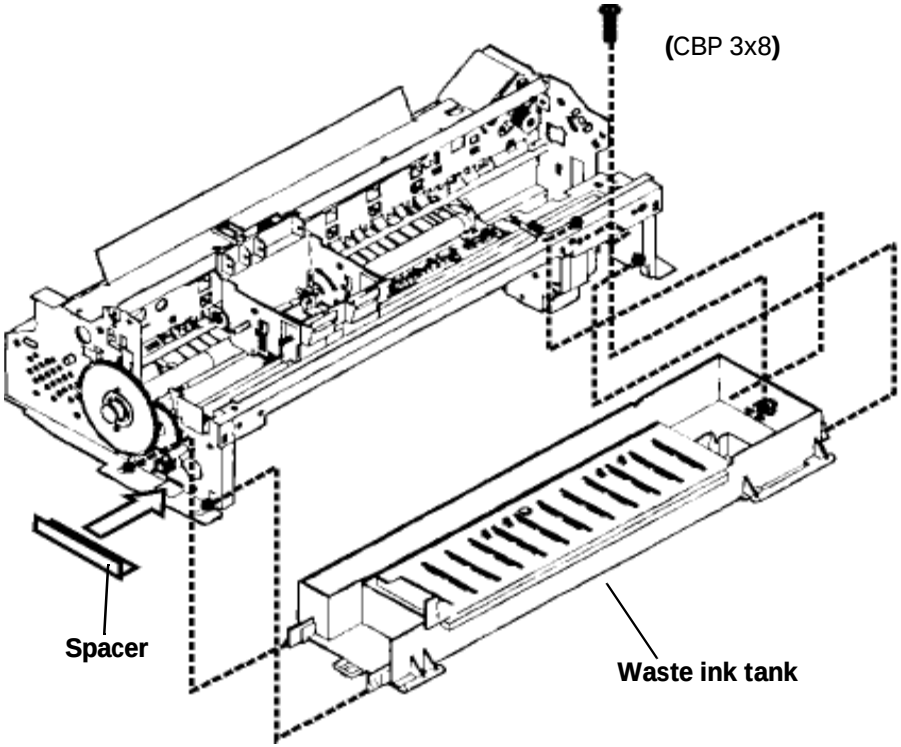



**Figure 4-1. Removing the waste ink tank**

4. Remove the spacer on the left side of the tray and carefully pull the tray out and downward.

CHECK POINT

**When re-installing the waste ink tank, make sure to secure the hooks on the left of the tray on top of the spacer.**

5. Remove one screw (CBP 3x10) securing the waste ink tank cover, and then remove the cover.
6. Carefully remove the old waste ink pads so as not to get yourself or anyone/anything else dirty.

## 4.5.2 Removing the cleaning assembly (Pump and Cap)

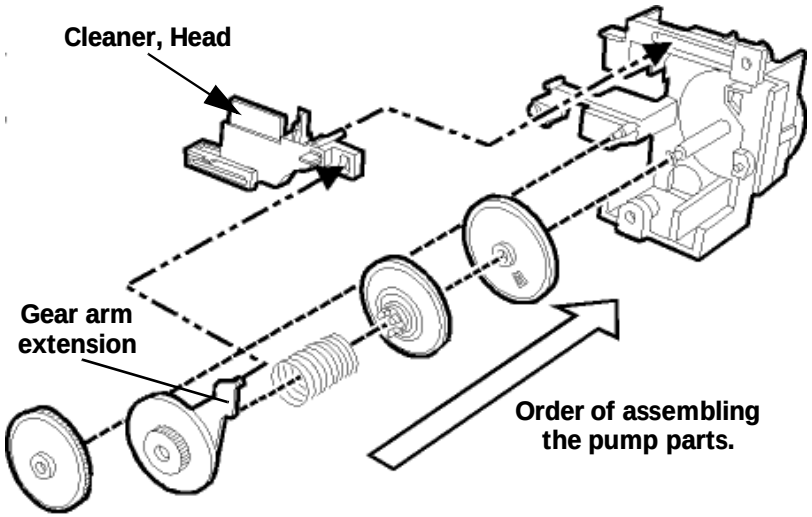
1. Remove the housing as described in “Removing the Housing” on page 82.
2. Remove the waste ink tank as described in “Removing the waste ink pads” on pag e92.
3. Loosen two screws located on the edge of the paper eject frame assembly and float release the joints for the paper eject assembly and the side frames, as shown on the next page.
4. Raise the printer mechanism toward ASF side so that you can see the bottom of the printer mechanism.
5. On the right side of frame, remove the hook holding the cap assembly and release two protrusions attached to the frame, lifting up the right side of cap assembly, then take it out towards the bottom of the printer mechanism. Note that the cap assembly is still connected to the pump assembly by the ink tube at this point. (Refer to Figure 4-2 on the next page.)
6. Remove two screws (CBP 3x8) securing the pump assembly to the frame. (Refer to Figure 4-2 on the next page.)
7. Release a hook securing the pump assembly to the frame and remove the pump assembly, moving it toward the right. (Refer to Figure 4-2 on the next page.

CAUTION

- **Do not damage the rubber part (black square) of the cap installed in the cap assembly. (If it gets damaged, it will not be able to adhere closely to the surface of the print head, and may cause a malfunction in operation.**
- **When replacing the cleaner head built in the pump assembly, be careful of the following points.**
  **- Do not touch the cleaner head with your bare hands. Use gloves or tweezers.**
  **- Do not let oil or grease touch the head cleaner.**
  **- When installing the cleaner head, set the rubber side (black side) toward the right side of the frame.**
- **When installing the pump assembly, do not tighten the screw more than necessary torque.**

CHECK POINT

- When reassembling the cleaning assembly, refer to the figure below.
- Since the spring is included among the gears in the pump assembly, be careful that the parts do not pop out during disassembly and assembly.
- When assembling the printer, be careful not to crush nor leave any stress on the ink tube connecting the pump assembly and the cap assembly.
- After installing the pump assembly, make sure that the cleaner parts move back and forth by rotating the gear 73.6.



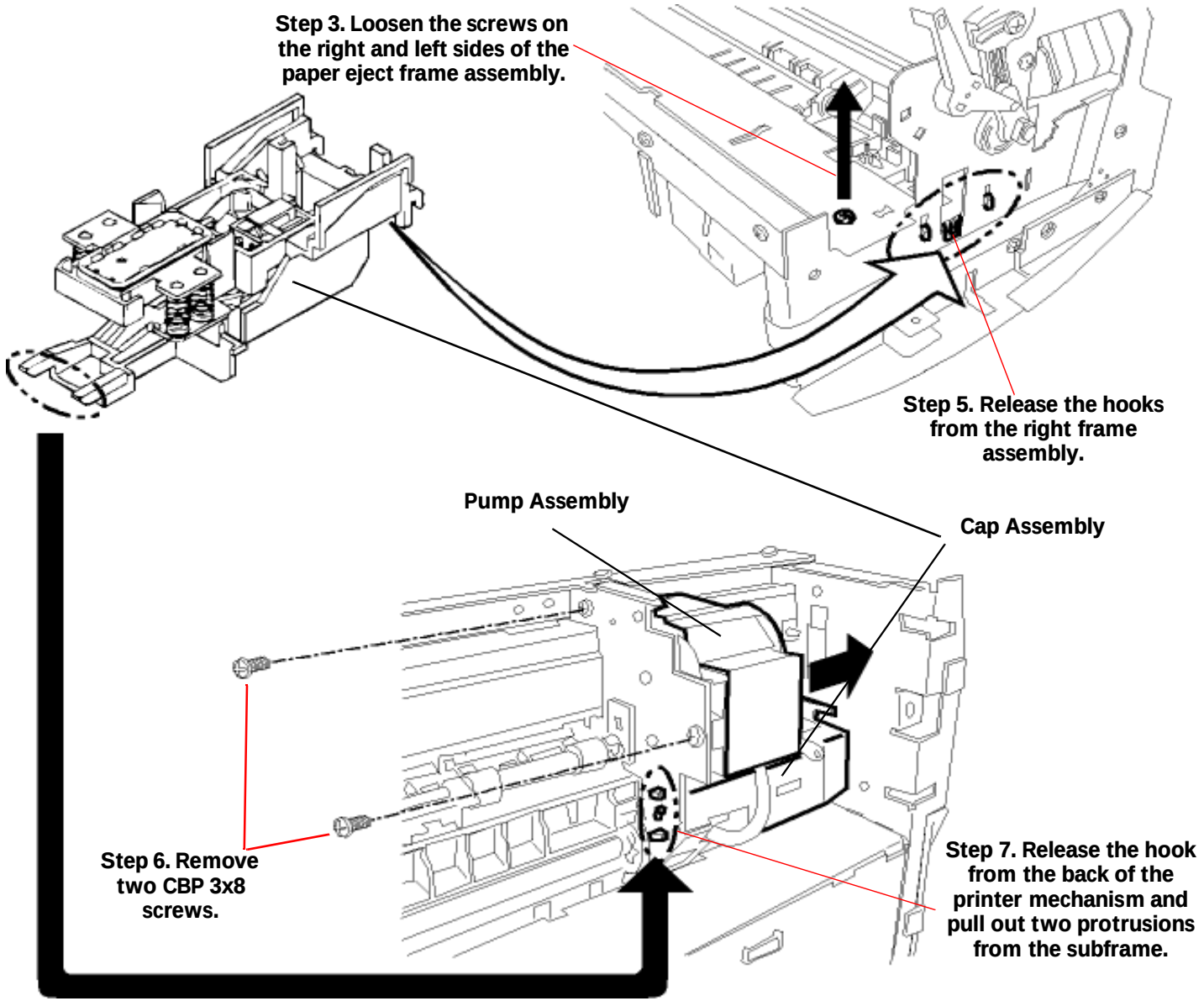

Step 3. Loosen the screws on the right and left sides of the paper eject frame assembly.
Step 5. Release the hooks from the right frame assembly.
Pump Assembly
Cap Assembly
Step 6. Remove two CBP 3x8 screws.
Step 7. Release the hook from the back of the printer mechanism and pull out two protrusions from the subframe.

**Figure 4-2. Removing the Cap and Pump Assemblies**

# 4.6 Disassembling the Printer Mechanism

This section explains procedures for disassembling the major parts or units of the printer mechanism.

## 4.6.1 Removing the Printhead Unit

1. Remove the upper cover as described in Section 4.3.
2. Remove the upper frame as described in "Removing the scanner support frame" on pag e84.
3. Rotate the flat gear 73.6 towards yourself (front) to release the carriage lock mechanism. Then move the carriage to the left edge.
4. Fully open the blue plastic cover for the black ink cartridge and squeeze the bottom of the cover to release it from the ink cartridge holder. Turn it slightly so the knob at the end of the cover releases from the carriage.
5. Move the carriage to the HP and repeat for the color ink cartridge cover.
6. Remove the carriage FFC and FFC guide as shown in Figure 4-3 on the next page.
7. Remove the tension spring 49.
8. Remove one screw (CBP 3x6) and twist the fastener to pull it out the hole on the right side.
9. Remove the printhead from the carriage.

See the following pages for the figures below:

Figure 4-3, "Removing the Print Head"
Figure 4-4, "Installing the Printhead"

CHECK POINT

- **Make sure that the earth board is installed to the carriage correctly. (There are 2 pins to determine the location.)**
- **When you install the printhead to the carriage, make sure that the location pin on the carriage side is placed in the notch of the printhead.**

CAUTION

- **Since the ink cartridge once taken out can not be used again, be sure to install a new ink cartridge when you return the printer to the user.**
- **When you return the printer to the user, be sure to pack the printer for transportation with a new ink cartridge installed and the carriage in the home position when the printer is turned on.**

ADJUSTMENT REQUIRED

**When you replace the printhead unit, perform the following adjustments (Refer to Chapter 5 for more details.):**

1. **Initial ink charge (Refer to Chapter 5/Section 5.2.2.3)**
2. **Head Voltage ID Input (Refer to Chapter 5/Section 5.2.2.7.)**
3. **Head Angular Adjustment (Refer to Chapter 5/ Section 5.2.2.8.)**
4. **Bi-D Adjustment (Chapter 5 /Section 5.2.2.9)**

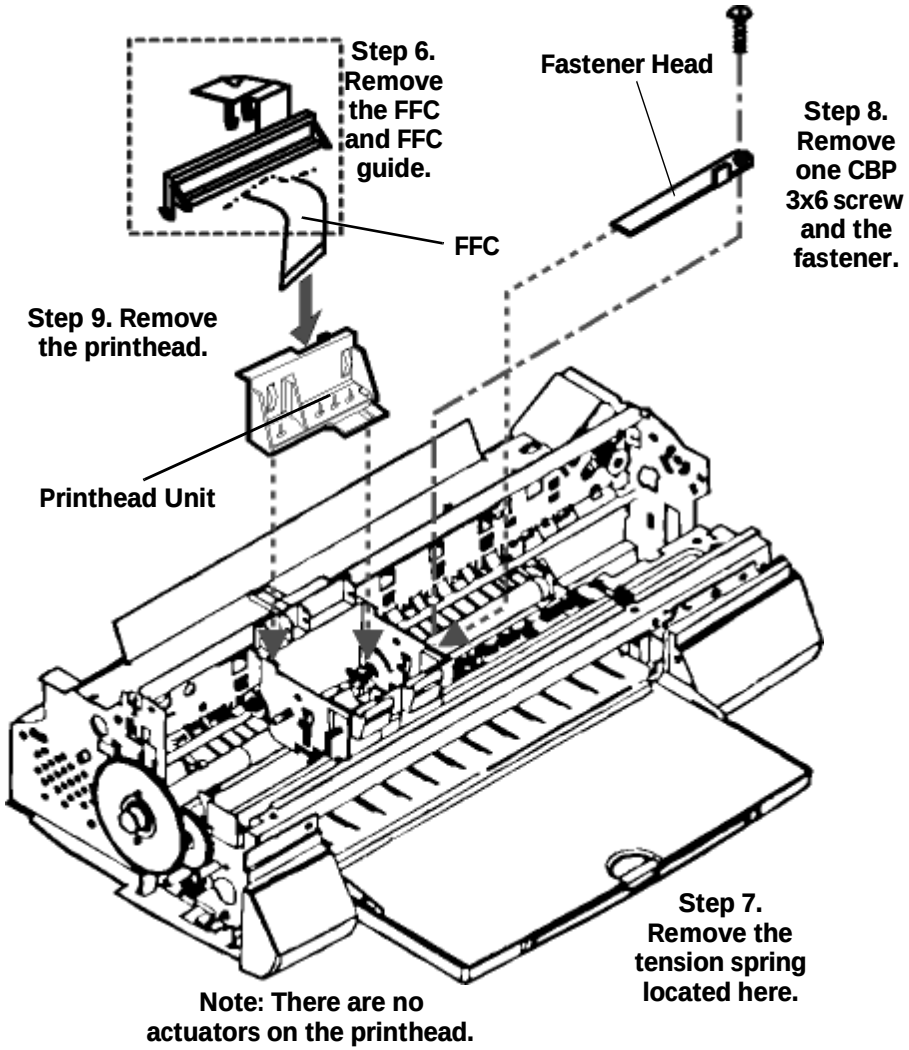

Step 6. Remove the FFC and FFC guide.
Fastener Head
Step 8. Remove one CBP 3x6 screw and the fastener.
FFC
Step 9. Remove the printhead.
Printhead Unit
Step 7. Remove the tension spring located here.
Note: There are no actuators on the printhead.

**Figure 4-3. Removing the Print Head**

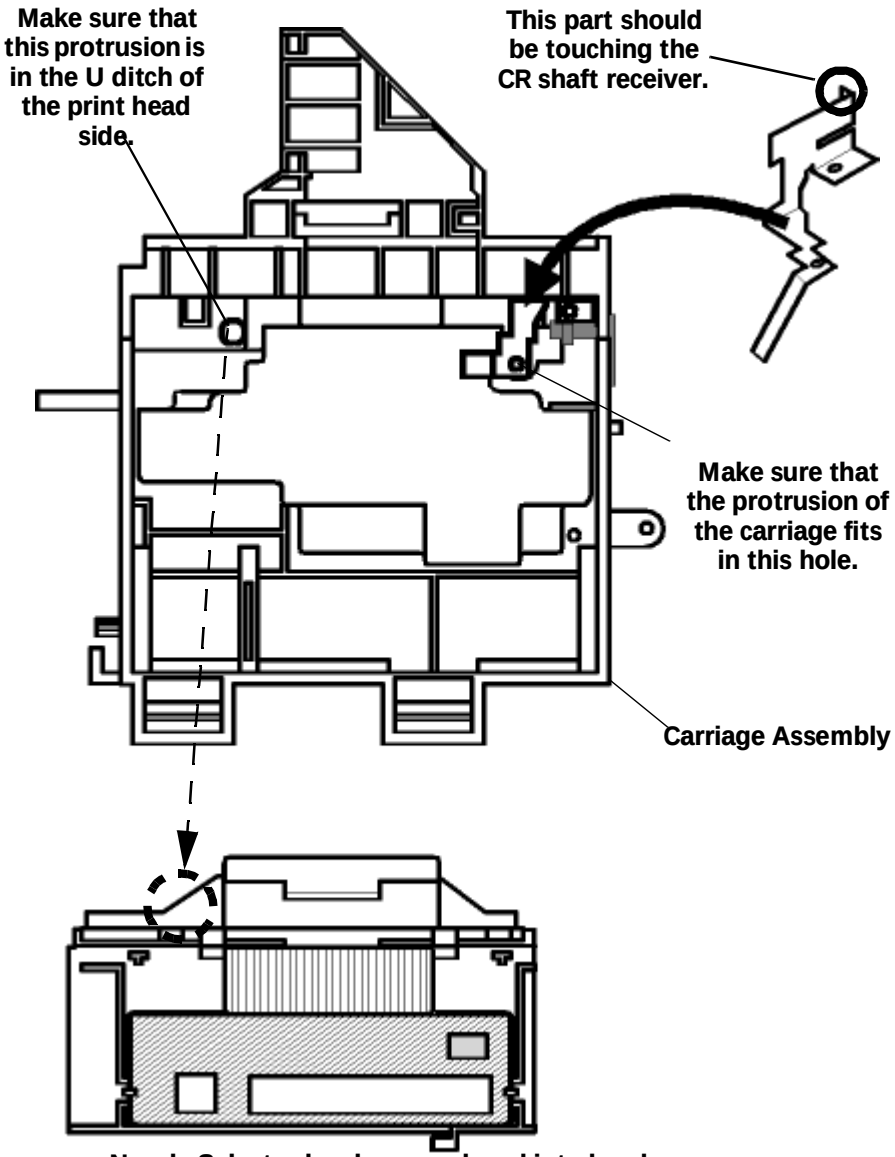

Make sure that this protrusion is in the U ditch of the print head side.
This part should be touching the CR shaft receiver.
Make sure that the protrusion of the carriage fits in this hole.
Carriage Assembly
Nozzle Selector has been enclosed into head.

**Figure 4-4. Installing the Printhead**

## 4.6.2 Removing the PF Motor Assembly

1. Remove the housing as described in “Removing the Housing” on page 82.
2. Remove the waste ink tank. (Refer to Section 4.5.1.)
3. Remove the following gears located on the left side of the printer mechanism.
   - Combination gear 12.4, 28
   - Gear 36
   - Gear 73.6

CAUTION

**Gear 73.6 is a precision gear and yet it is difficult to remove. Do not bend the gear and do not hold the gear by its edges. Doing so may cause the gear paper feed operation to be slightly off.**
**Remove the c-ring securing the gear with tweezers or a (-) driver, and gently pull the gear away. Try to only touch the knobs or edges on the inner or central part of the gear.ve it while holding the whole gear, slightly pulling it toward you.**

***NOTE:*** *It may be a good idea to bring an extra gear with you when performing on-site service.*

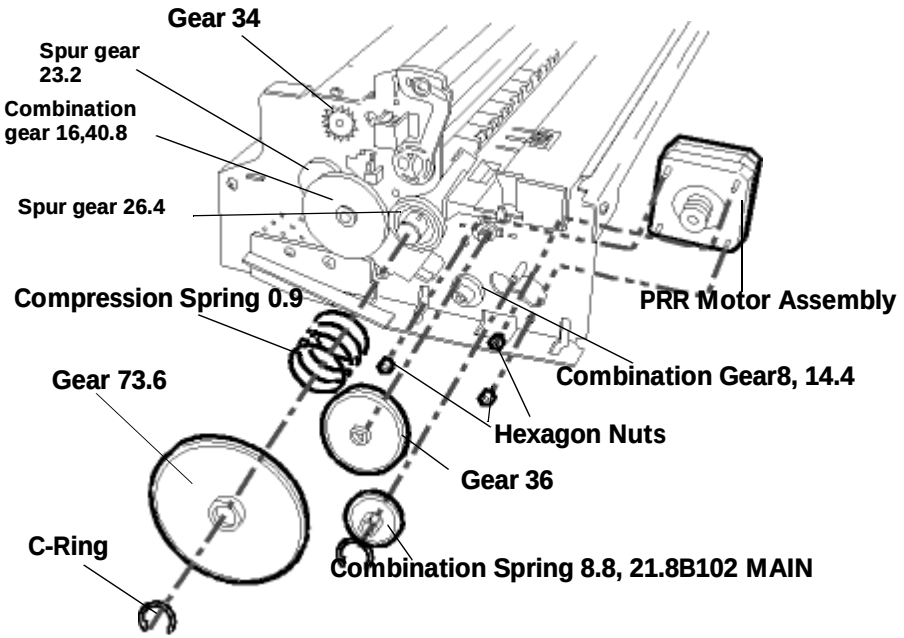



**Figure 4-5. Removing the PF Motor Assembly**

4. Remove the circuit board tray as described in “Removal of the Circuit Board Tray” on pag e90, and remove the PF motor cable from connector CN8.
5. Tilt the Stylus Scan so you can see the bottom and cut the plastic tie band that secures the PF motor cable.
6. Remove 3 hexagon nuts with the M3 wrench on the left side frame and slide the PF motor pinion gear toward the front of the Stylus Scan where you can remove it through the large hole.

CHECK POINT

- **When disassembling the PF motor assembly, pull the motor assembly out of the frame a little bit and remove it, sliding it into a larger hole in the frame. (See Figure 4-5.)**
- **Be careful of the direction of the wires from the PF motor assembly.**
- **Do not damage or mar the grooves in the gears during the disassembly and assembly.**

### 4.6.3 Removing the CR Motor Assembly

1. Remove the housing. (Refer to Section 4.3)
2. Rotate the gear 73.6 toward you and release the carriage lock mechanism, then move the carriage to the center.
3. Pull out the circuit board tray as described in “Removal of the Circuit Board Tray” on pag e90, and disconnect the CR motor cable from CN7.
4. Loosen the timing belt by pushing the driven pulley holder and remove the timing belt from the pulley on the CR motor.
5. Remove two screws (CBS 3x6) and remove the CR motor assembly.

CHECK POINT

**After installing the CR motor assembly, make sure that two protrusions on the motor bracket are aligned with the location holes in the frame. (Refer to Figure 4-7.)**

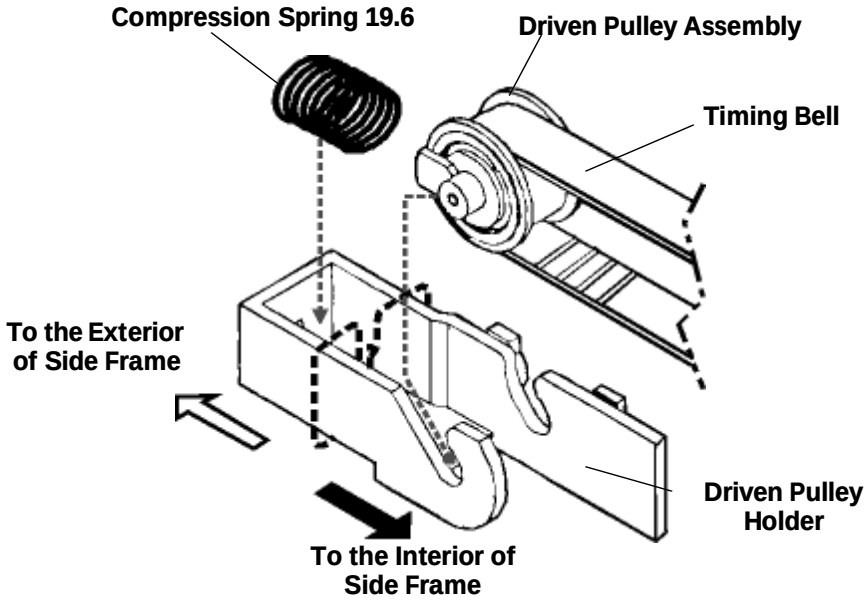



**Figure 4-6. Removing the Timing Belt**

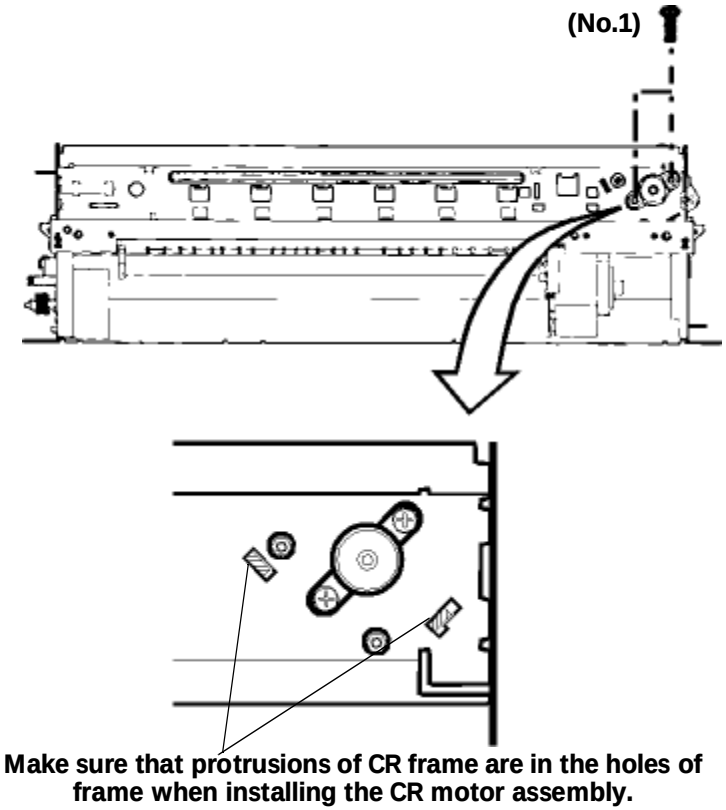



**Figure 4-7. Removing and Installing the CR Motor Assembly**

## 4.6.4 Removing the ASF Assembly

1. Remove the housing. (Refer to Section 4.3.)
2. Release the fixed hook from the inside of the printer mechanism and remove the gear 34 from the roller shaft in the ASF assembly.
3. Remove the cables from the cable hook on the printer mechanism and the hook on the ASF assembly.
4. After removing 2 screws (one No.7 screw and one CR shaft installation screw), remove the ASF assembly, releasing the protrusion on the left side of the ASF assembly from the hole in the frame.
5. With one hand move the paper depressor to the left and up, and with the other hand remove the ASF assembly, releasing the protrusion on the left side of the ASF assembly from the hole in the frame.

CHECK POINT

- **When installing the ASF assembly, make sure that the frame and ASF assembly are attached each other without any space between them.**
- **Screws for ASF assembly should be used at the following positions. (Looking from the back of printer)**
  **- Right:CR shaft installation screw**
  **- Left:Screw No.7 (+Bind, S- tight, Sems R2; with a plain washer)**

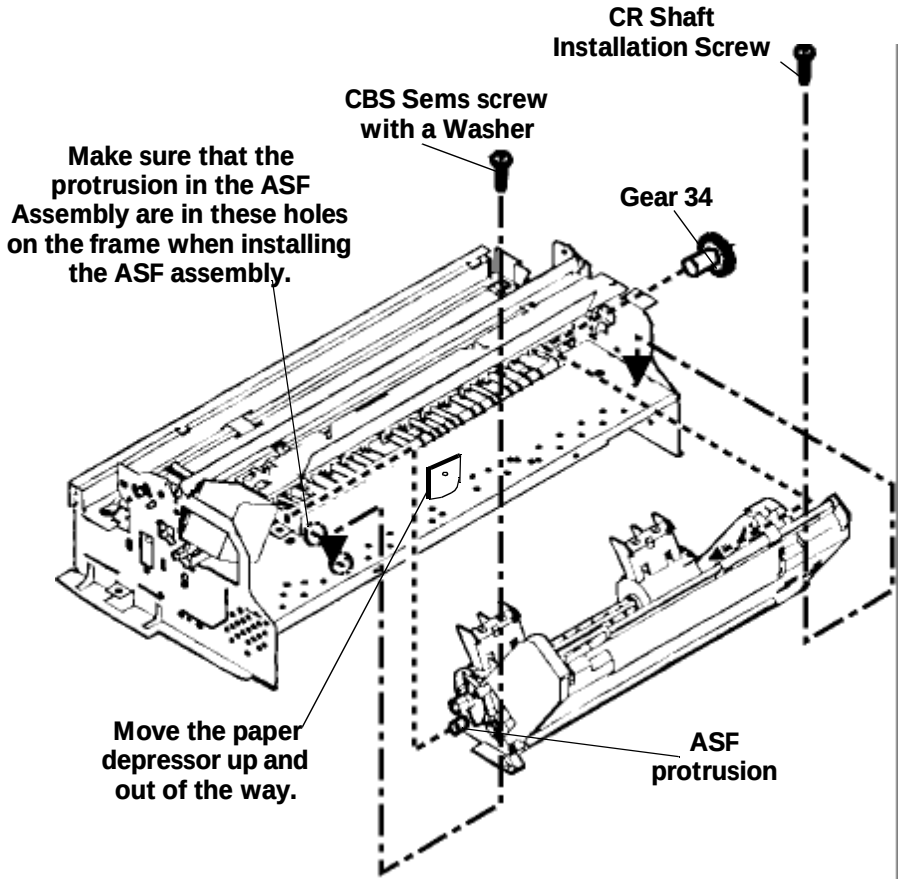

CR Shaft Installation Screw
CBS Sems screw with a Washer
Make sure that the protrusion in the ASF Assembly are in these holes on the frame when installing the ASF assembly.
Gear 34
Move the paper depressor up and out of the way.
ASF protrusion

**Figure 4-8. Removing the ASF Assembly**

### 4.6.4.1 Disassembling the ASF Roller Assembly

1. Remove the ASF assembly. (Refer to Section 4.6.4.)
2. Remove the brake lever, releasing one leg of the torsion spring 41.2 from the hook of the ASF frame.
3. Remove the fixing shaft bushing from the right side of the LD roller shaft and the release hopper lever.
4. Move the left paper feed assembly to the center and remove the cam fixing bushing (white plastic) attached to the left side of LD roller shaft.
5. Push the LD roller shaft to the left and remove the left shaft fixing bushing after releasing its hook.
6. Remove the right and left sides of the hopper assembly from the protrusions on the ASF frame.
7. Lift up the right side of paper feed roller assembly a little, move the LD roller shaft to the right and remove it from the left side of the ASF frame.
8. Holding the hopper assembly by hand, remove the cam part of hopper assembly from the right holes of ASF frame.

See the next section for details on disassembling the paper-feed roller assemblies.

- **During disassembly and assembly of the hopper assembly, do not let the grease on the cam parts touch other parts. Wipe off any grease smeared on other parts.**
- **Be careful of the direction of the hopper lever release when installing it.**
- **Make sure that the right and left fixing bushings are installed steadily and do not slip off.**
- **During assembly, attach the cam fixing bushing after installing the LD roller shaft to the ASF frame.**
- **When installing the right and left paper feed roller assemblies to the LD roller shaft, the black paper feed roller assembly goes on the right side and the one in the standard EPSON color goes on the left of the shaft.**

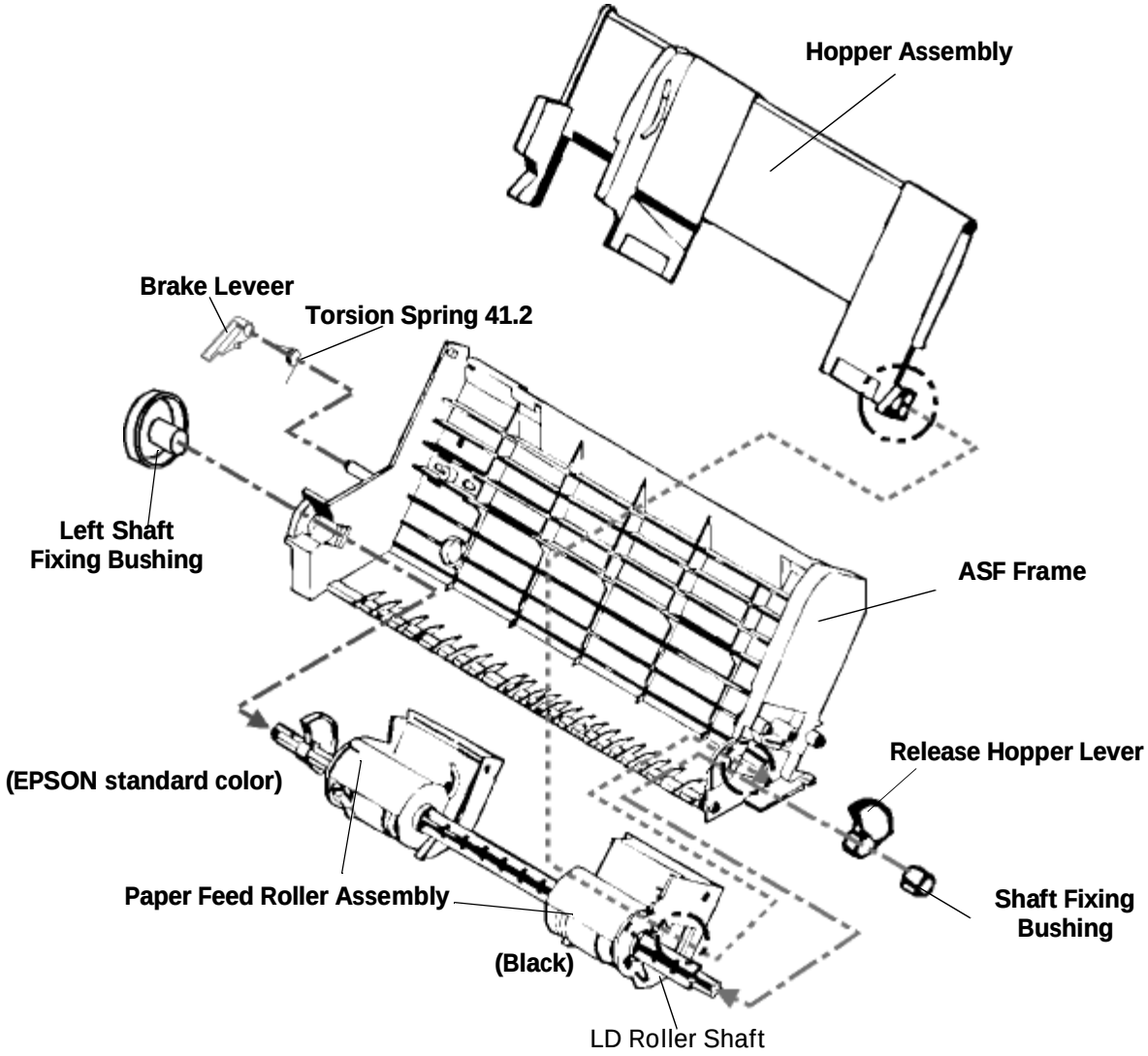



**Figure 4-9. Disassembly of ASF Assembly**

### 4.6.4.2 Removing the Right and Left LD Roller Assembly

1. Disassemble the ASF assembly and remove the paper feed roller assembly and hopper assembly from the ASF assembly. (Refer to Section 4.6.4.)
2. Take out the right and left compression springs 1.66 from the back of the hopper assembly.
3. Pull out the cam part of the hopper assembly from the hole located on the frame of the right LD roller assembly,
4. Pull out the LD roller shaft. The paper feed roller assembly and hopper assembly should be disconnected by now.
5. Release the hook of LD roller assembly at the shaft hole of the paper feed roller assembly. Also, release the fixed hook of the cover roller LD and remove the LD roller assembly.

CHECK POINT

- **When installing the LD roller assembly, make sure that the hooks are hung on the paper feed assembly.**
- **During assembly, when setting the compression spring 1.66 to the spring installation position in the paper feed assembly, hang the spring on the hook temporarily. Also, do not forget to release the hooks of these springs from the holes located on the back of paper feed assembly by rotating the spring. (Refer to the figure below.)**

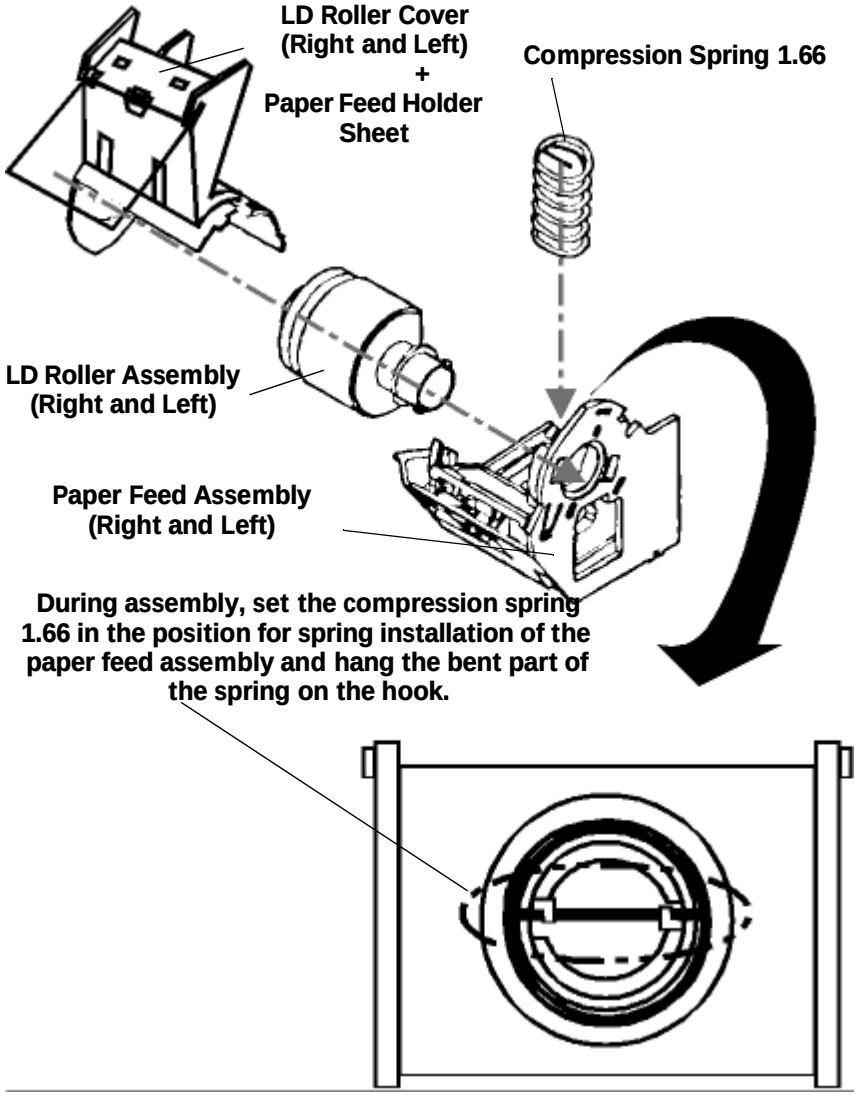

LD Roller Cover
(Right and Left)
+
Paper Feed Holder
Sheet
Compression Spring 1.66
LD Roller Assembly
(Right and Left)
Paper Feed Assembly
(Right and Left)
During assembly, set the compression spring 1.66 in the position for spring installation of the paper feed assembly and hang the bent part of the spring on the hook.

**Figure 4-10. Disassembly of Paper Feed Roller Assembly**

## 4.6.5 Removing the Carriage Assembly

1. Remove the housing. (Refer to Section 4.3)
2. Push in the driven pulley holder and remove the timing belt from the pulley on the CR motor side. (See Figure 4-6 on p age99.)
3. Take the compression spring 19.6 out of the driven pulley holder.
4. Remove the driven pulley assembly from the driven pulley holder with the timing belt. Slide the driven pulley holder and remove it from the frame.
5. Remove the 63.7 torsion spring between the frame and PG lever. Release the fixed hook of the PG lever from the PG support lever and remove the PG lever.
6. Release the fixed hook of the PG lever support from the right parallelism bushing and remove the PG lever support and washer. (Refer to the figure next page.)
7. Remove one screw (CBS Sems R2 3x6) and rotate the right parallelism adjustment bushing so that it fits in the notch of the frame, and remove it.
8. Remove the CR assembly with the CR guide shaft.

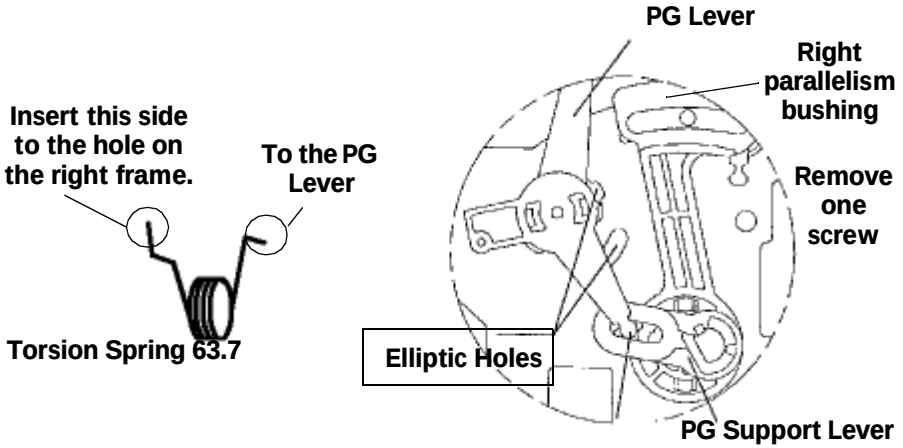



**Figure 4-11. Installing the PG Lever**

CHECK POINT

- **When disassembling the right parallelism adjustment bushing, mark present location where the bushing is fixed on the frame so that you can omit gap adjustment after assembly.**
- **When installing the washer, pay attention to its direction. (Convex side should face the right parallelism adjustment bushing side.) Refer to the figure below.**
- **When installing the PG lever, refer to the figure below.**

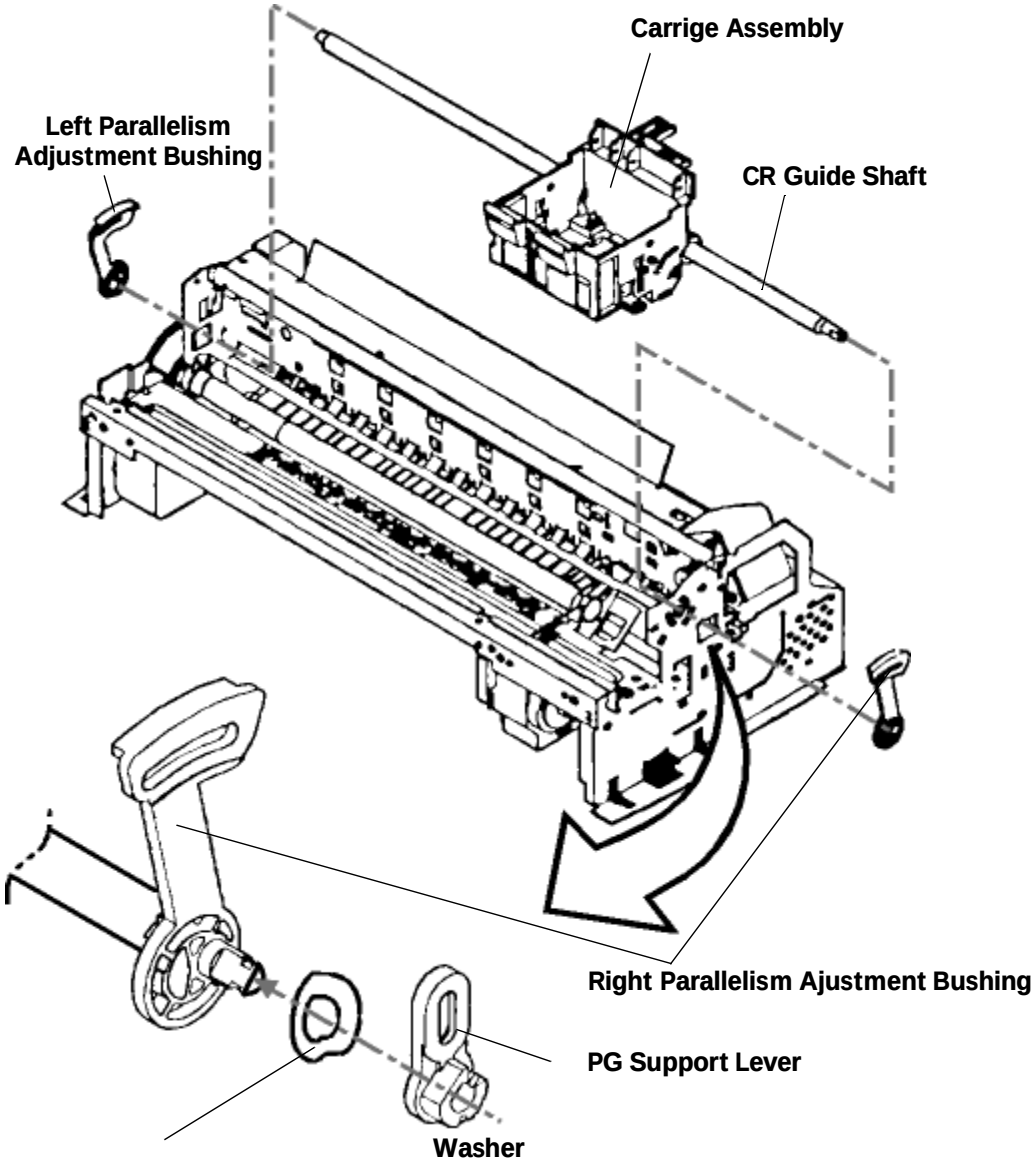



**Figure 4-12. Removing the Carriage Assembly**

## 4.6.6 Removing the PF Roller Assembly

1. Remove the housing. (Refer to Section 4.3.)
2. Remove the carriage assembly. (Refer to Section 4.6.5.)
3. Remove three screws (CBS 3x6) on the printer mechanism and disassemble the cable guide board.
4. Remove six upper paper guide assemblies, releasing their springs from the hooks in the frame.
5. Remove the front paper guide ;B, releasing the hooks. (Refer to next page.)
6. Remove the paper eject roller assembly, releasing the fixed locks located on the right and left edges of the shaft.
7. Release the fixed hook located on the left side of the PF roller assembly shaft and rotate it so that the protrusion on the shaft (white) and hole for receiving the shaft in the frame align.
8. Slide the PF roller assembly to the right and pull it out.

CHECK POINT

- **During disassembly and assembly of the upper paper guide assemblies, since one of the upper paper guide assemblies to be installed on the right side overlaps with the PE detector lever, pay attention not to damage the lever.**
- **Be careful not to damage the hook during disassembly and assembly of the front paper guide ;B.**
- **Be careful not to scratch the PF roller assembly during disassembly and assembly, since its surface is specially coated to improve paper feeding. (black part)**
- **Be careful not to damage the combination gears.**

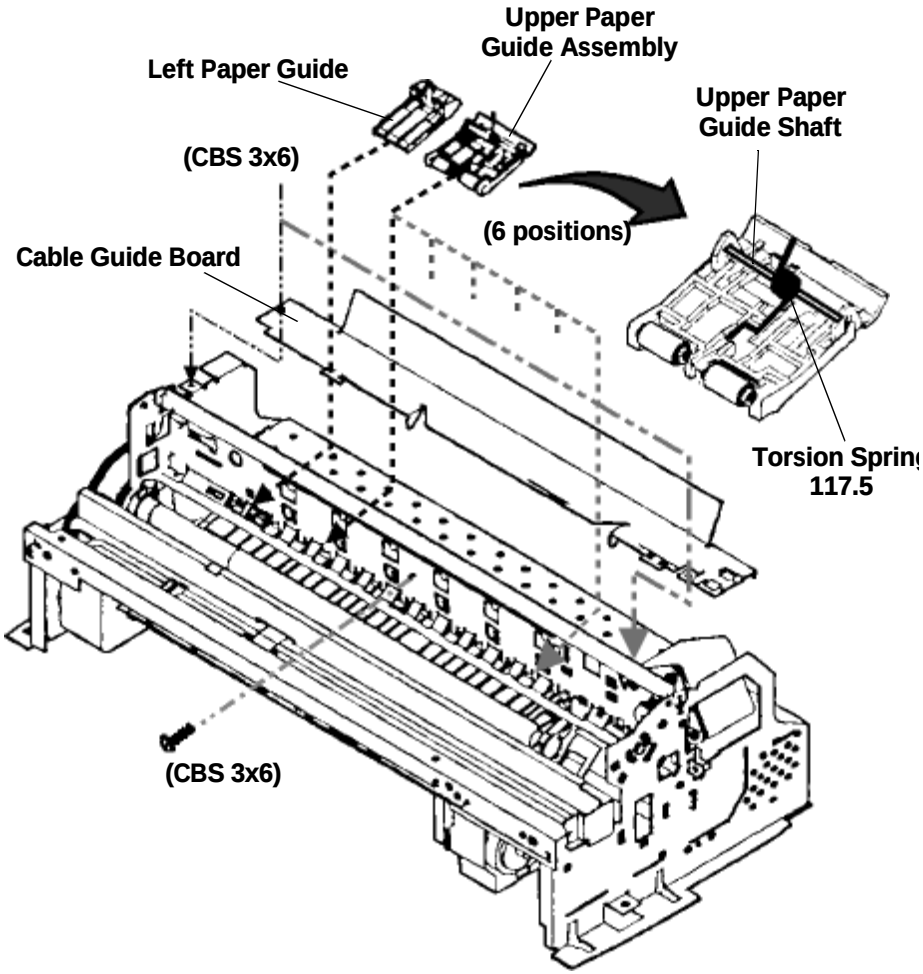



**Figure 4-13. Removing the Paper Guide Assembly**

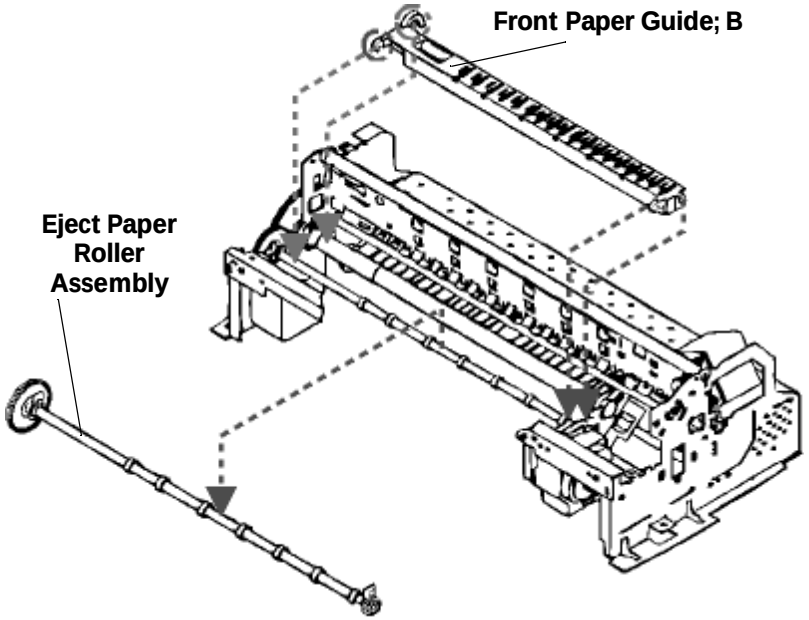



Figure 4-14. Removing the Paper Eject Roller Assembly

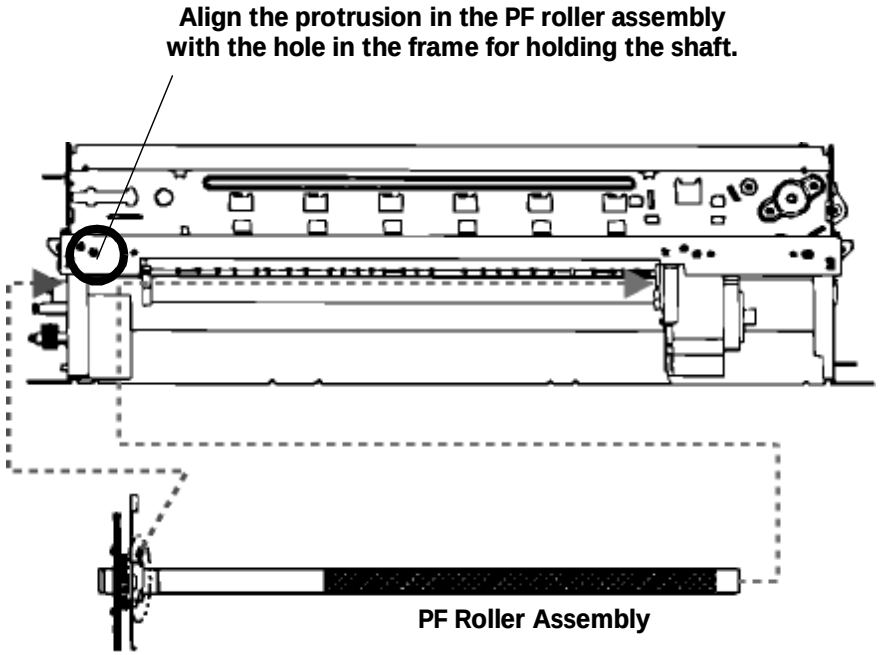



Figure 4-15. Removing the PF Roller Assembly

## 4.6.7 Removing the PE Paper Detector Assembly

1. Remove the housing. (Refer to Section 4.3.)
2. Release two fixed hooks securing the PE detector assembly from the back of the frame and remove the PE detector assembly, sliding it upward. Remove the PE board assembly and PE lever, if necessary.

CHECK POINT

**During assembly, make sure that the tip (sensor part) of the detector lever is in the hole of paper guide assembly.**

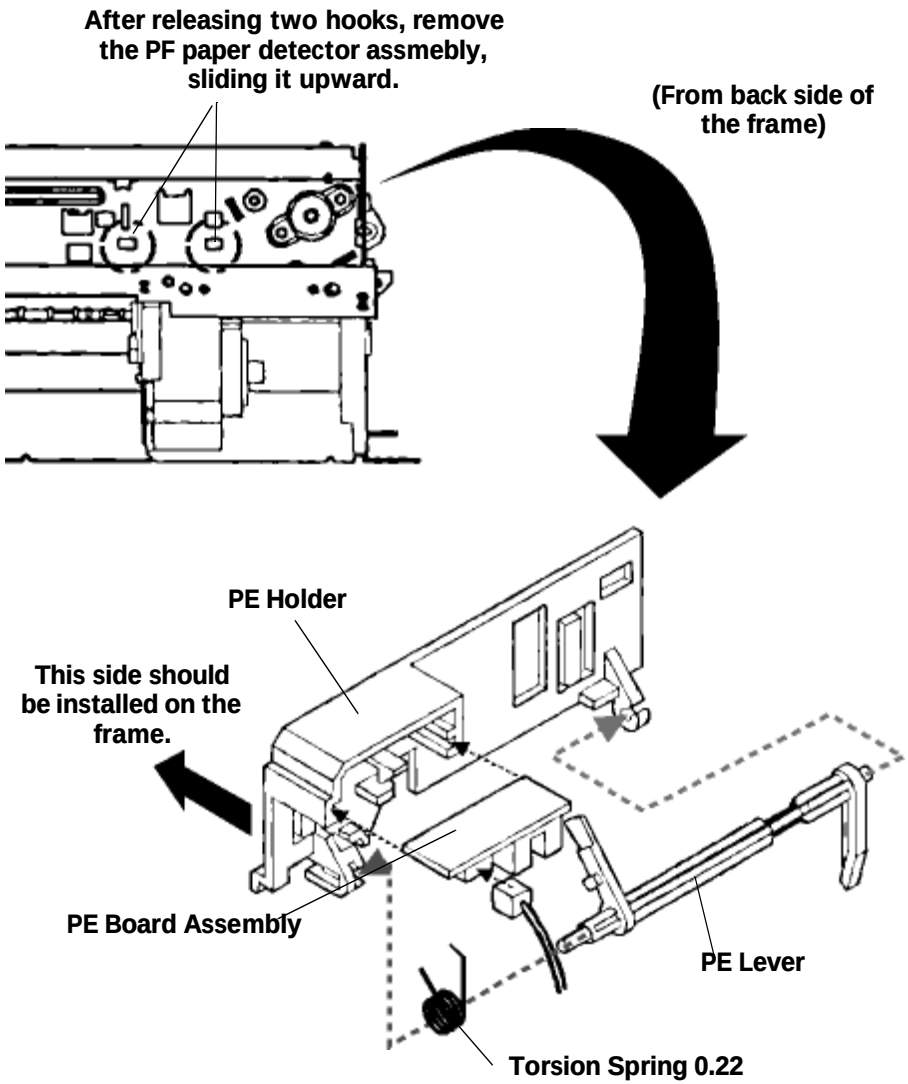

After releasing two hooks, remove the PF paper detector assmebly, sliding it upward.
(From back side of the frame)
PE Holder
This side should be installed on the frame.
PE Board Assembly
PE Lever
Torsion Spring 0.22

**Figure 4-16. Removing the PE Detector Assembly**

### 4.6.8 Removing the HP Detector

1. Remove the housing. (Refer to Section 4.3.)
2. Remove the cable from the HP detector and take it out after releasing the fixed hook.

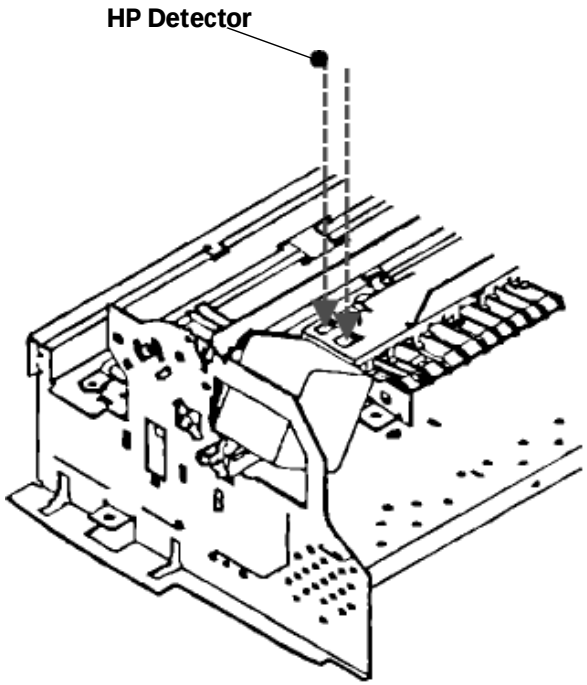



**Figure 4-17. Removing the HP Detector**

## 4.7 Disassembly of the Scanner Mechanism

You only need to remove the scanner from the scanner support frame when servicing the scanner mechanism.

## 4.7.1 Removing the scanner

You only need to remove the scanner from the scanner support frame when replacing the scanner mechanism. You do not need to remove the scanner from the support frame when servicing

- The printer mechanism
- The circuit boards
- Any motors
- Scanner parts such as the glass and lamp.

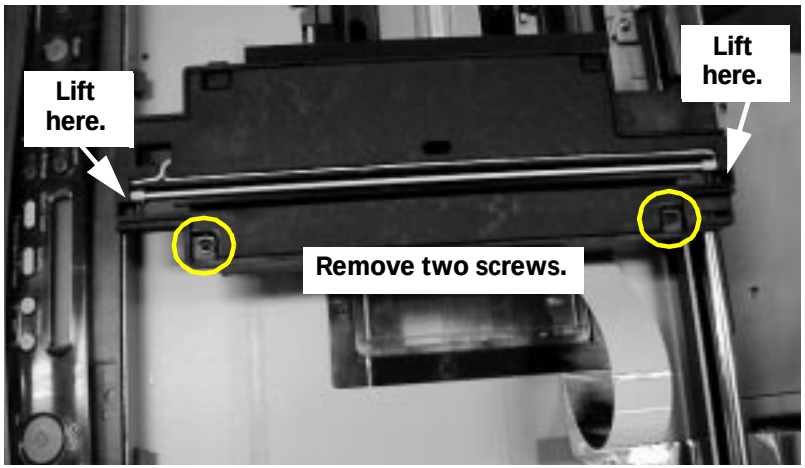
To remove the scanner, see the following.

1. Remove the rear cover and top cover as described in “Removing the Housing” on pag e82.
2. Pull out the circuit board tray as described in “Removal of the Circuit Board Tray” on pag e90.
3. Disconnect the scanner FFC (CN14).
4. Remove two screws (CBS 3x6) securing the tension spring and base and unhook one end of the tension spring.
5. Remove the CR belt by pushing in the tension spring end and rotating the belt while pulling it laterally away from the driven pulley.
6. Flip the scanner over so that it is upside down and resting on the ASF. Use pliers to remove the CR belt clamp.
7. Slide the scanner CR guide shaft out of the bracket and slide the scanner off the free end of the CR guide shaft.

### 4.7.1.1 Removing the lamp

You do not have to remove the scanner mechanism to replace the lamp.

1. Remove the rear cover and top cover as described in “Removing the Housing” on page 82.
2. Remove two black screws (CBP 3x8 with flange) securing the scanner cover.



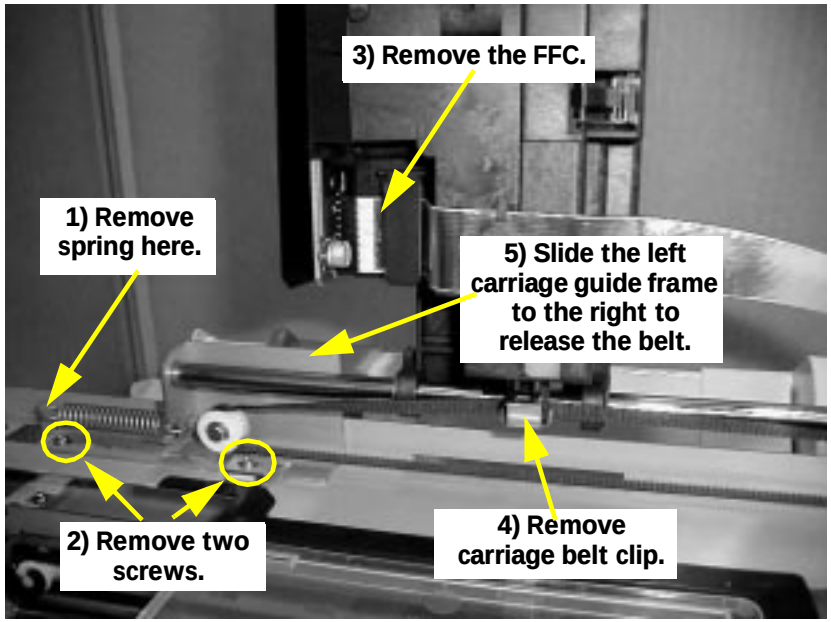

3. Lift the cover by the sides.
4. Remove one connector from CN2.

### 4.7.1.2 Removing the scanner power supply board

1. Remove the scanner cover and lamp as described above.
2. Remove one screw (CBP 3x8 with flange).
3. Remove one connector CN1.
4. Remove the power supply board.

### 4.7.1.3 Removing the scanner assembly from the scanner guide shaft

1. Using pliers, remove one spring..


3) Remove the FFC.
1) Remove spring here.
5) Slide the left carriage guide frame to the right to release the belt.
2) Remove two screws.
4) Remove carriage belt clip.

2. Remove two screws (CBS 3x6).
3. Turn the scanner vertical and remove the FFC.
4. Using pliers, remove the carriage belt clip.
5. Slide the left carriage guide frame slightly to the right.
6. While rotating the belt around the pulley, remove the belt from the driven pulley.
7. While supporting the scanner with one hand, slide the left carriage guide frame to the left until the carriage guide shaft comes free.
8. Slide the scanner assembly off the carriage guide shaft.

## 4.7.2 Removing the scanner motor

1. Remove the rear cover and top cover as described in “Removing the Housing” on pag e82.
2. Pull out the circuit board tray as described in “Removal of the Circuit Board Tray” on pag e90.
3. Disconnect the scanner motor cable (CN13).

Using a 3M wrench, remove two nuts securing the motor.

**When installing the scanner motor, it is a good idea to remove the spring and loosen the left scanner guide frame as described in Section 4.7.1.3 above.**

CHAPTER

5

# ADJUSTMENT

The scanner mechanism requires no adjustment for any service operation provided you closely follow the specifications in this manual and the instructions in Chapter 4 “Disassembly and Assembly”.

## 5.1 Required Adjustments

The Stylus Scan printer mechanism requires the adjustments shown in Table 5-1. Perform the necessary adjustment referring to the steps and figures described throughout this chapter. Table 5-2 provides a list of necessary adjustments and the conditions when they are required.

**Table 5-1. List of Service Procedures That Require Adjustment**

| No. | Content of Operation | Adjustment Procedure |
|---|---|---|
| 1 | Replacement of the printhead | 1. Perform Vh voltage writing operation.<br>2. Perform initial ink charge.<br>3. Perform printhead angle adjustment.<br>4. Perform Bi-d Adjustment.<br>5. Reset ink counter. |
| 2 | Replacement of the main board | 1. Perform Vh voltage writing operation.<br>2. Perform Bi-d adjustment. |
| 3 | Replacement or Removal of the Carriage Unit | 1. Perform parallel adjustment.<br>2. Perform printhead angle adjustment.<br>3. Perform Bi-d adjustment.<br>4. Reset ink counter. |
| 4 | Replace of the CR Motor | 1. Perform Bi-d adjustment. |
| 5 | Replacement of the Printer Mechanism | 1. Perform Head Voltage ID Input.<br>2. Perform initial ink charge.<br>3. Perform Bi-d adjustment. |

**Table 5-2. List of Required Adjustments**

| No. | Adjustment Item | Conditions |
|---|---|---|
| 1 | Parallelism Adjustment | ■ When you replace or remove the carriage or carriage guide shaft.<br>■ When you move the parallelism adjustment bushing. |
| 2 | Initial Ink Charge | ■ When you replace or remove the printhead. |
| 3 | Head Voltage ID Input | ■ When you replace the printhead.<br>■ When you replace the main board.<br>**Note)** The values stored in this address are not erased by the EEPROM reset operation. |
| 4 | Printhead Angle Adjustment | ■ When you replace or remove the printhead.<br>■ When you move the printhead angle-adjust lever.<br>■ When you replace or remove the carriage or carriage guide shaft. |
| 5 | Bi-D Adjustment | ■ When you replace or remove the printhead.<br>■ When you replace the main board.<br>■ When you replace the CR Motor.<br>■ When you replace or remove the carriage or carriage guide shaft. |
| 6 | Reset ink counter. | ■ When you replace the printhead.<br>■ When you replace or remove the carriage or carriage guide shaft. |

Table below shows the actions taken and required adjustments in the order to be performed.

### 5.1.1 Adjustment Tools Required

Table 5-3 below shows necessary adjustment tools.

**Table 5-3. Adjustment Tools Required**

| No. | Name | Adjustment Item | Contents/Spec. |
|---|---|---|---|
| 1 | Thickness Gauge | Parallelism Adjustment | 1.04 mm |
| 2 | Adjustment Program | Mechanism Settings | Program for Production; P00A10W |

CAUTION

- **Never use a bent (curved or tilted) or rusty thickness gauge.**
- **Remove any dirt, grease or obstacles on the thickness gauge before you use it.**

## 5.2 Printer Adjustment

This section explains detailed adjustment procedures for the printer mechanism such as parallelism adjustment and using the adjustment program to enter market and Head ID information (see page 124).

***NOTE:*** *The adjustment program for the Stylus Scan is not an exclusive service program; it is actually the production program used at the factory during assembly. However, for the purposes of the this manual, it will be called the adjustment program except when refering to the Smart menu icon.*

The following section describes the physical adjustments that must be performed. See “Using the Service-Adjustment Program” on page 116 for details on adjustments performed using the adjustment program.

### 5.2.1 Printer hardware adjustments

#### 5.2.1.1 Parallelism Adjustment

When replacing the carriage assembly or removing it during printer mechanism disassembly, perform the parallelism adjustment during re-assembling and set the standard distance from the surface of the printhead to the paper surface.

CAUTION

- **Do not scratch the special coated surface of the PF roller assembly or the ribbed surface of the front paper guide; B.**
- **Be careful not to scratch or leave anything such as dirt on the surface of the printhead. (Never use a rusty or dirty thickness gauge. Also, do not push the thickness gauge hard against the head.)**

**[RIGHT PARALLELISM ADJUSTMENT]**

1. Install the "parallelism adjustment bushing” for right and left frame and set them on the peaking of the upper frame side so that they match with “the standard mark of parallelism adjustment bushing".
2. Make sure the PG lever is pulled forward (small gap position).

3. Move the carriage to the center and set the thickness gauge on the fixed position of the front paper guide; B as shown in Figure 5-1 on the next page.
4. Move the carriage so that the printhead overlaps the thickness gauge.

CHECK POINT

- **Put the thickness gauge on the flat side of a ribbed section of the front paper guide; B.**
- **To move the carriage, pull the timing belt with your hand.**

5. Move the right parallelism adjustment bushing to the rear until the thickness gauge moves with the carriage when you move the carriage about 20 mm right and left (the gap will narrow).
6. From the point where the thickness gauge starts moving with the carriage, move the gear of the right parallelism adjustment bushing one notch toward you (the gap will widen)
7. With the PG lever pulled forward (gap is small), move the carriage right and left to make sure that the thickness gauge does not move.

## [LEFT PARALLELISM ADJUSTMENT]

8. Perform Steps 2 to 7 for the left parallelism adjustment bushing.

## [CHECKING PARALLELISM]

9. Perform steps 1 to 4 again.
10. Make sure that the thickness gauge does not move right and left along with the carriage when the carriage is moved about 20 mm.
11. Move the right parallelism adjustment bushing one notch to the rear (the gap will narrow).Then check that the thickness gauge moves along with the carriage. If the thickness gauge does not move, go back to Step 1 and repeat the adjustment.
12. If the gap is adjusted correctly, move the right parallelism adjustment bushing one notch toward you (the gap will widen).

## [FIXING PARALLELISM ADJUSTMENT BUSHING]

13. Fix the right and left parallelism adjustment bushings with screws. (one screw for each.)

When completing this adjustment, check the overlap amount of the printhead and head cleaner.

1. Rotate the gear 73.6 and move the head cleaner to the printer rear side.
2. Move the carriage next to the head cleaner and make sure that overlap between the tip of the printhead and cleaner head is more than 0.5 mm.
3. Then, rotate the gear 73.6 and return the head cleaner to the front position.

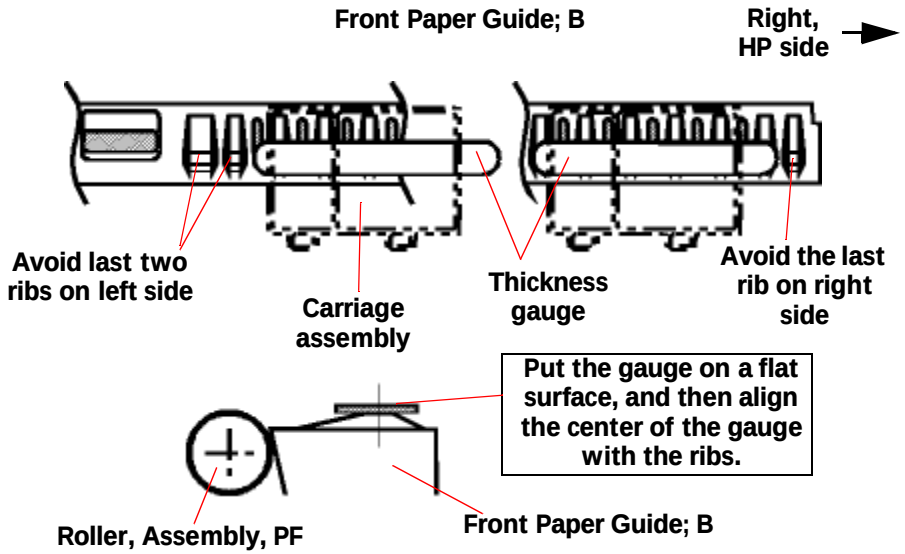

Front Paper Guide; B
Right, HP side
Avoid last two ribs on left side
Carriage assembly
Thickness gauge
Avoid the last rib on right side
Put the gauge on a flat surface, and then align the center of the gauge with the ribs.
Roller, Assembly, PF
Front Paper Guide; B

**Figure 5-1. Setting the Parallelism-Adjustment Gauge**

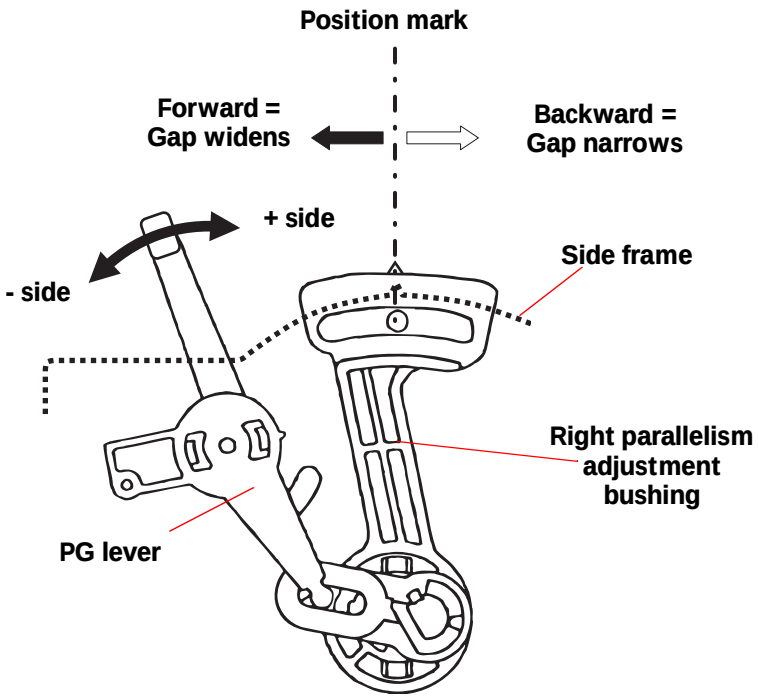



**Figure 5-2. Parallelism Adjustment**

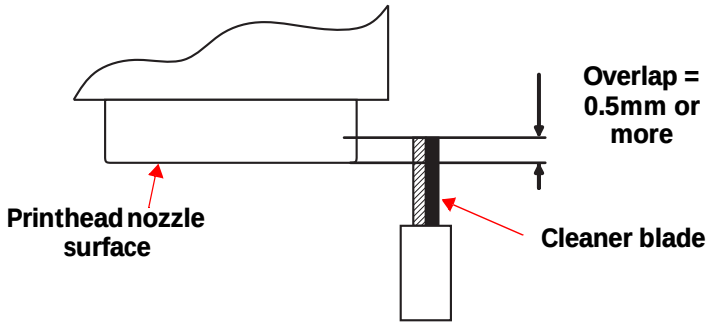



**Figure 5-3. Overlap of Head Surface and Cleaner Blade**

## 5.3 Using the Service-Adjustment Program

For the Stylus Scan, instead of an exclusive service-adjustment program, you need to use the production program when performing certain service operations.

This program is necessary to eliminate any malfunction or fluctuation between individual printer mechanisms and printer parts. Therefore, any time you replace the printer mechanism, printhead, or main board you need to enter the correct information in the main board using this production program.

### 5.3.1 Installing the program

1. Insert the floppy disk in the "A" drive and open the "A" drive folder from My Computer or the Explorer.
2. Click the program icon for the Adjustment program.

***NOTE:*** *The program name varies according to model and program version. At the time of the publication, SS 2000 = N90B01W and SS2500 = P00B01W*

3. Select an installation folder and click OK.

## 5.3.2 Openning the Start-up menu

1. Connect the printer and PC and turn on the printer.
2. From the Start menu, select Programs>Program for Production>P00B01W The following screen appears.

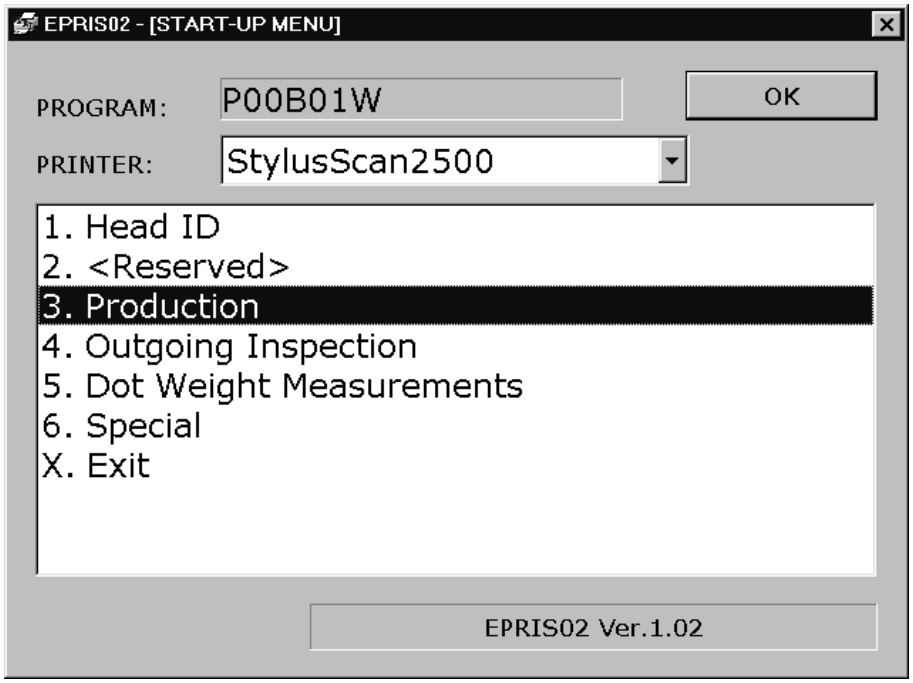



**Figure 5-4. Inital Menu**

From the Startup menu you need to choose Head ID or Production depending on the adjustment procedure you perform. See the table below for details.

**Table 5-4. Software-based Adjustment Procedures**

| Adjustment procedure | See | Then see |
|---|---|---|
| Input the head voltage | "Head ID Menu" on page 117 | "Head Voltage ID Input" on page 124 |
| Charge ink | "Production Menu" on page 120 | "Initial Ink Charge Operation" on pag e122 |
| Adjust normal Bi-d | | "Bi-D Adjustment" on page 122 |
| Adjust variable Bi-d | | |
| Clean the printhead | | "Head Cleaning Operation" on pag e123 |
| Drain ink | | "Ink draining" on pag e126 |
| Reset EEPROM | Special | |
| Clear ink counter | | |

The following table gives a list of adjustment that are available on the service-related menus. Other menus and items are for production purposes only.

**Table 5-5. Service Menu Items**

| Menu name | Operations available |
|---|---|
| Head ID Menu | Input Head ID |
| Production Menu | ■ Input the head voltage<br>■ Charge ink<br>■ Adjust normal Bi-d<br>■ Adjust variable Bi-d<br>■ Clean the printhead<br>■ Drain ink |
| Special | ■ Reset EEPROM<br>■ Clear ink counter |

### HEAD ID MENU

To enter the Head ID menu, follow these steps.

1. Open the Start-up menu as described above.
2. Select Head ID and click OK. The following menu appears.

CAUTION

**Only select Print Head ID in the Head ID menu. All other options are for factory use only.**

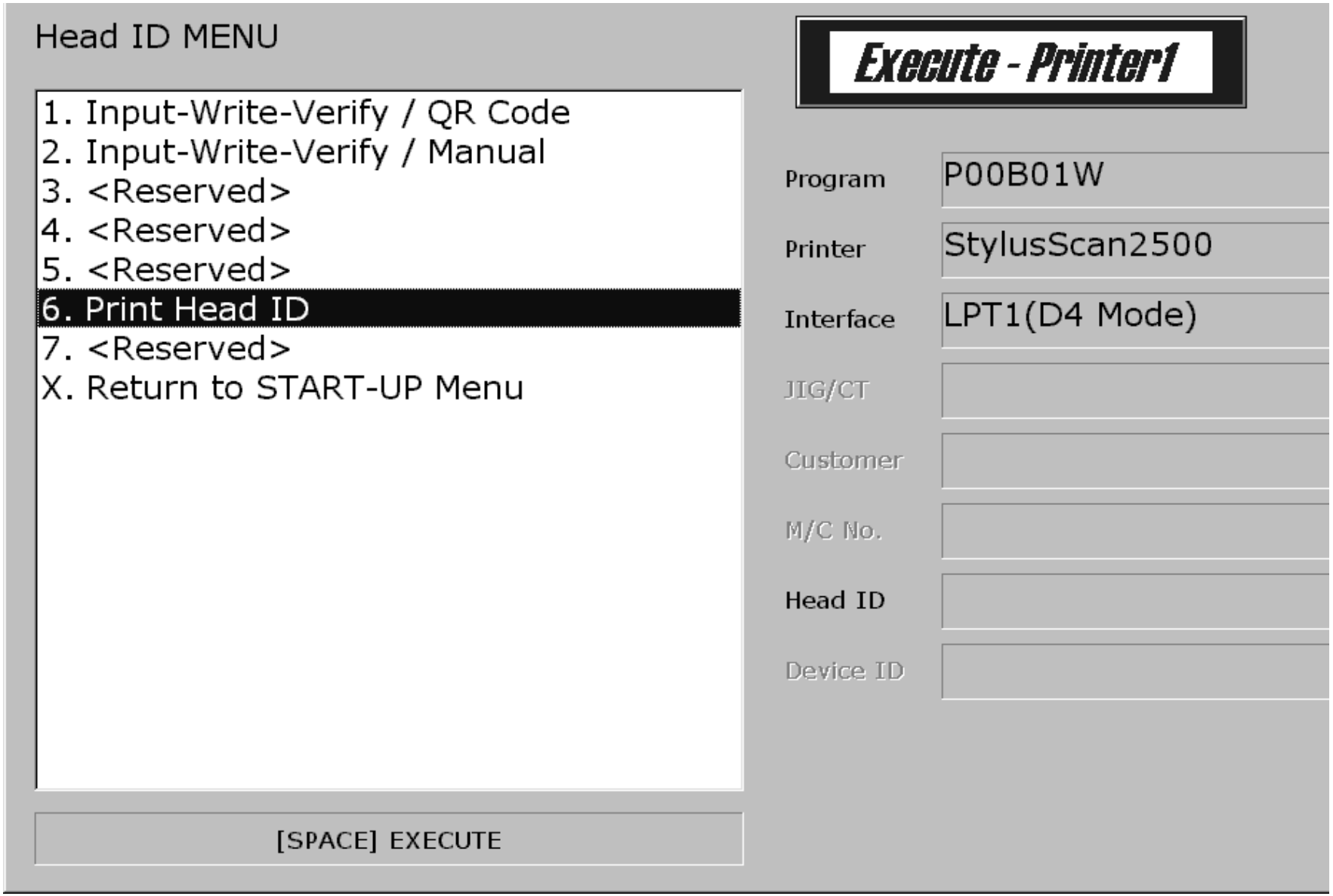
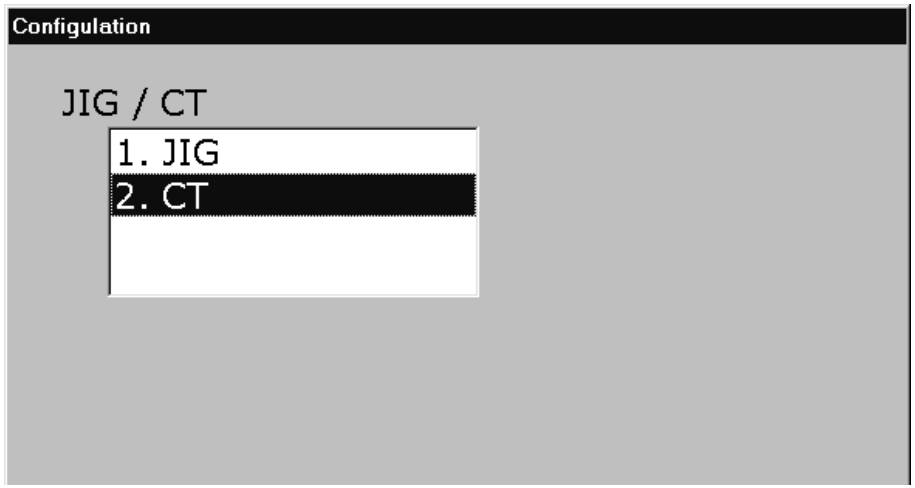



**Figure 5-5. Head ID Menu**

## PRODUCTION MENU

To enter the Production menu, follow these steps.

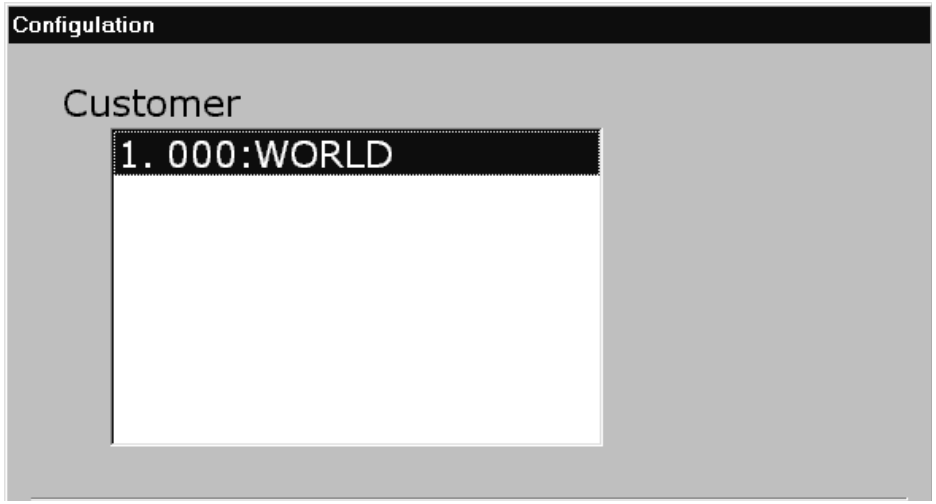
1. Open the Start-up menu as described above.
2. Select Production and click OK.
3. Make sure CT (cartridge) is selected in the first Configuration window and then click Next.



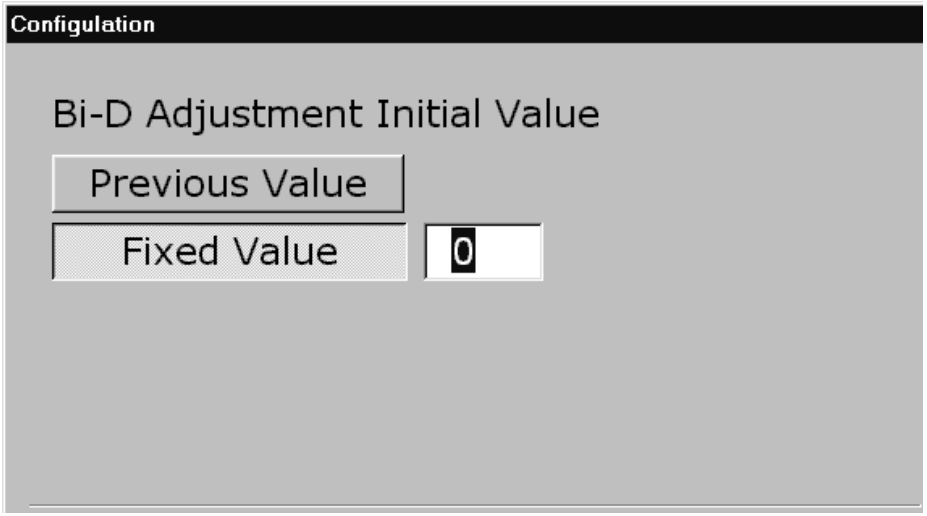

CAUTION

**Do not select JIG in the Configuration window as this option is for factory use only.**

4. Click Next again.




5. Click FINISH.




6. The Production Menu appears, as shown on the next page. See the following pages for details on performing service-related adjustments.

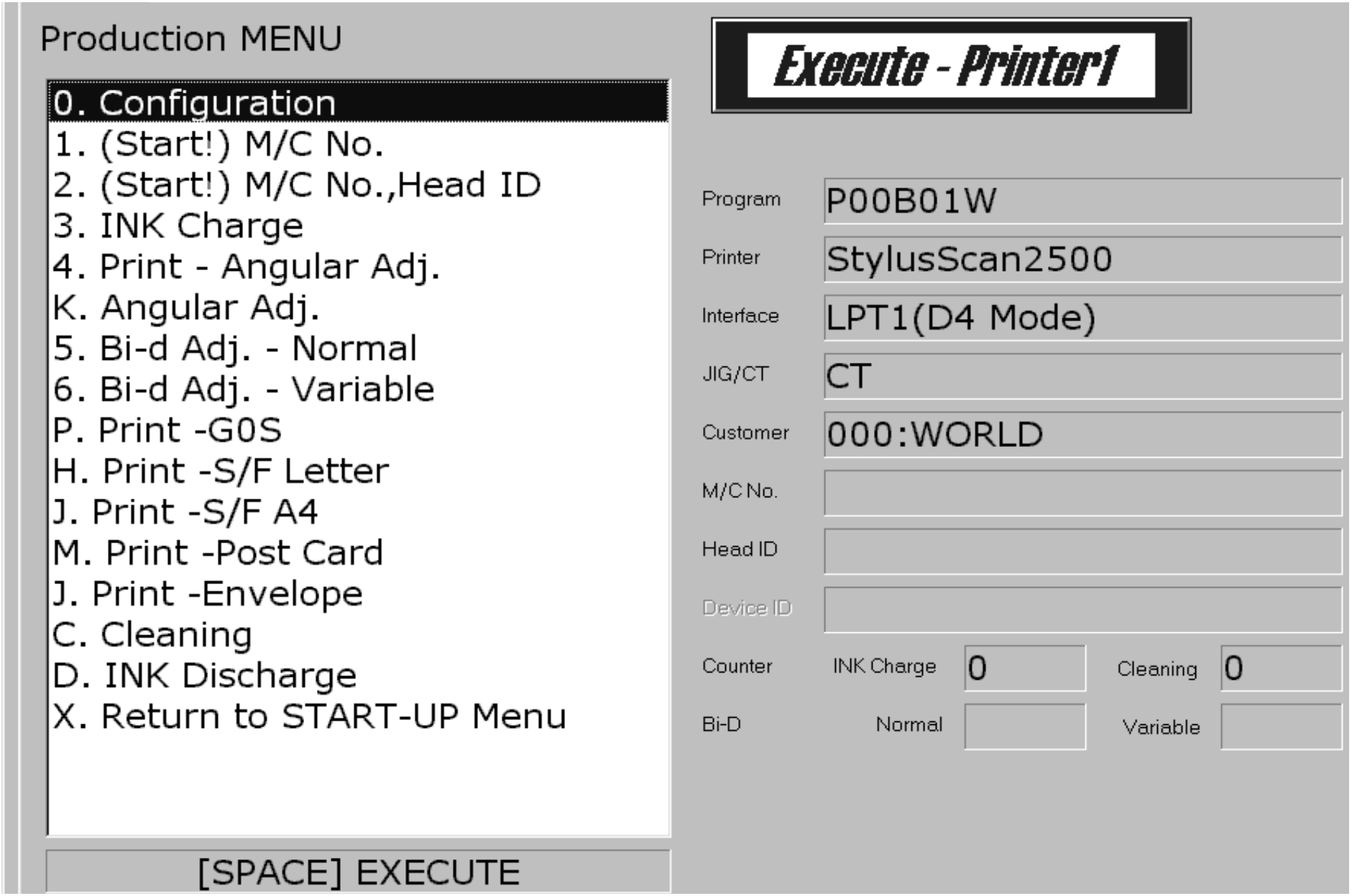



**Figure 5-6. Production Menu**

## 5.3.3 Initial Ink Charge Operation

There is no ink in the ink path of a spare printhead and printer mechanism when first installed; therefore, after replacing either of these two parts, you need to perform an initial ink charge.

1. Enter the Production menu as described in "Using the Service-Adjustment Program" on pag e116.
2. On the Production menu (Figure 5-6), select **Ink Charge. Then click OK in the dialog box that appears.**

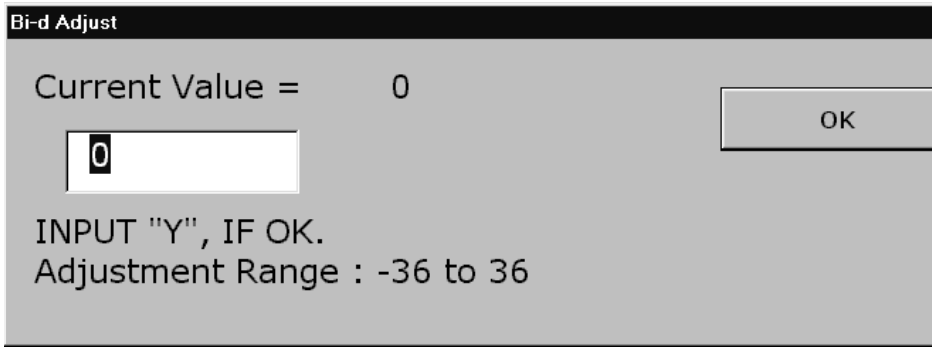
**It takes approximately 90 seconds for the ink charge operation to complete.**

## 5.3.4 Bi-D Adjustment

You perform this adjustment to correct differences in printing positions, which is caused by slippage of printing timing in right and left directions during the Bi-directional printing. Therefore, you need to perform this adjustment after performing the following operations.

- Replacing the printer mechanism
- Replacing the main board
- Replacing the CR motor
- Replacing the Carriage Assembly
- Replacing the Printhead

1. Enter the Production menu as described in "Using the Service-Adjustment Program" on page 116.
2. On the Production menu (Figure 5-6), select **Bi-d Adj. - Normal. The Bi-d Adjust dialog box appears.**




3. Click OK in the dialog box that appears to print adjustment patterns with the current settings.

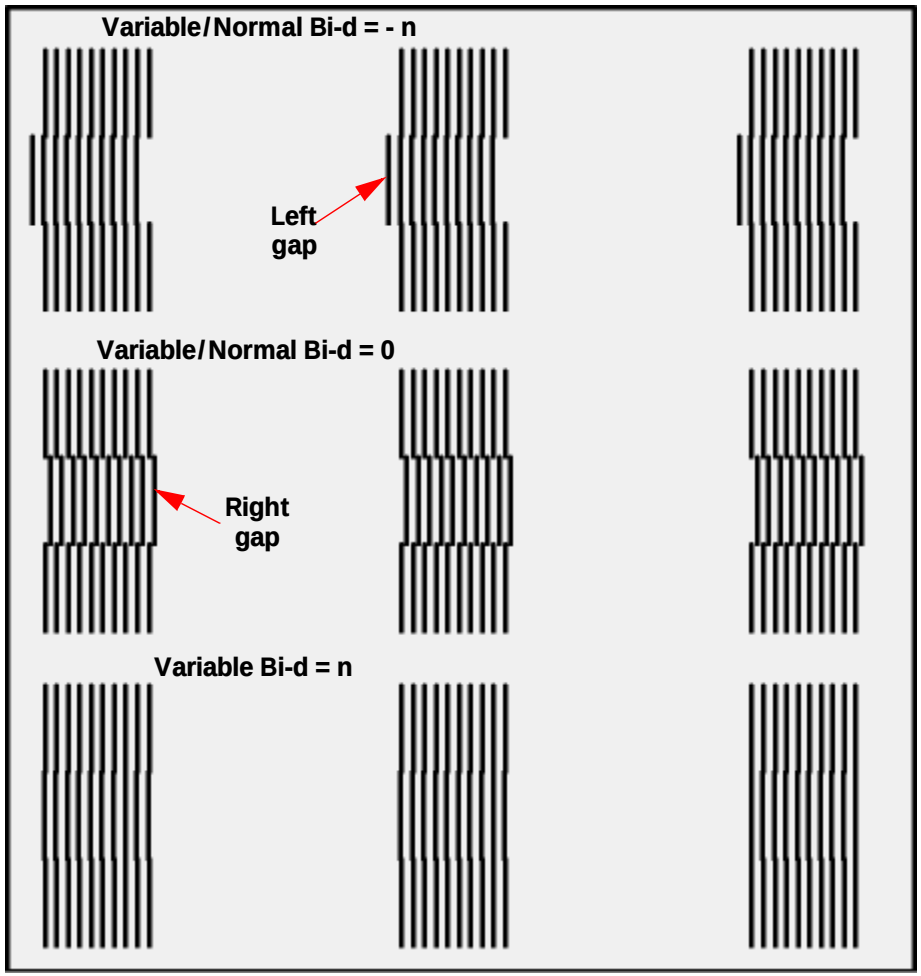



**Figure 5-7. Bi-D ADjustment Pattern Sample**

4. Looking at the printed patterns, determine which set is vertically aligned. Enter the number of that set in the Bi-d Adjust dialog box. If no patterns are vertically aligned, entered the number of the pattern that is most aligned.
   Repeat this process until the lines are aligned, and then enter "y" in the Current Value field.

## 5.3.5 Head Cleaning Operation

Unlike many previous models, the Stylus Scan does not have a dummy cleaning sequence called CL3, which was performed to prevent ink from being unnecessarily consumed when cleaning was repeated without any printout. However, Stylus Scan is alternatively equipped with the strongest cleaning sequence CL2 contained in this adjustment program. With this sequence, you can forcibly solve the clogged-nozzle problems that were caused by viscous ink.

CAUTION

**If you cannot recover the clogged nozzles even after performing the CL2 operation, enter the Initial ink charge sequence by referring to "Initial Ink Charge Operation" on page 122.**

1. Enter the Production menu as described in "Using the Service-Adjustment Program" on page 116.
2. On the Production menu (Figure 5-6), select **Cleaning. Then click OK in the dialog box that appears.**
3. The printer enters the CL2 sequence.

**The CL2 cleaning operation takes 60 seconds to complete.**

## 5.3.6 Head Voltage ID Input

Head voltage value adjustment function enables you to write printhead ID. This operation is considered the most important to maintain proper ink discharging system. If an ID is not written correctly, it results in white or color lines and also cause wrong dot-weight errors. This adjustment is required in the following cases.

1. When exchanging the main board
2. When exchanging the printhead
3. When exchanging the printer mechanism

CAUTION

**When performing this operation, also see Table 5-4 on page 117 to determine what other procedures are necessary.**

1. When replacing any of the parts above, make a note of VH voltage ID. You can find the VH voltage ID on the following position:
   - Printhead: On the top side of the printhead.
   - Printer mechanism: On the label of the packing box of the printer mechanism.
1. Enter the Head ID menu as described in "Using the Service-Adjustment Program" on pag e116.
2. On the Production menu (Figure 5-6), select **Head ID. Then click OK in the dialog box that appears.**
3. From the Head ID menu, select Print Head ID to verify the voltage information is enabled.

## 5.3.7 Head Angular Adjustment

During production, slight variations are created in printheads and carriage (which are used as a printhead base.) The head angular adjustment procedures compensates for these differences so that no banding or color/ white line patterns appear in the printout.

To adjust the printhead angle correctly, an exclusive lever for adjusting the printhead angle is installed on the side of the carriage unit. By moving this lever, you are able to adjust the printhead angle without removing the ink cartridge.
This adjustment is required in the following cases.

- When a printhead is replaced.
- When the carriage unit is replaced.
- When the angle adjustment lever is moved.

Print the check pattern in the adjustment program to determine the angle degree needed for the printhead. Then move the adjustment lever in the carriage unit to set the printhead angle referring to the printed check pattern.

CAUTION

**Before or after performing this operation, refer to Table 5-2 and perform appropriate adjustments or operations.**

1. Remove the upper case from the main unit. (Refer to Chapter 4.)
2. Enter the Production menu as described in "Using the Service-Adjustment Program" on page 116.
3. On the Production menu (Figure 5-6), select Print - **Angular Adj. The following patterns are printed.**

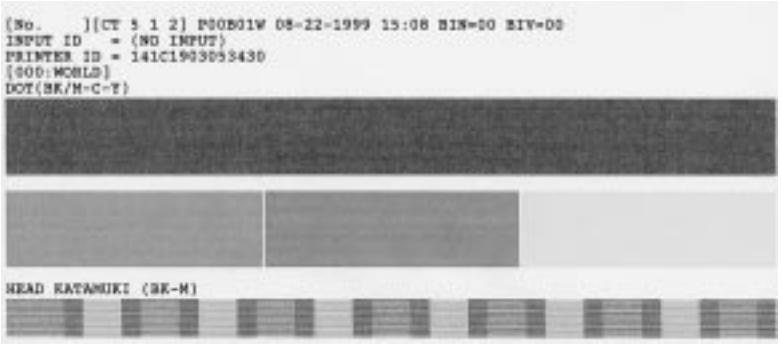

(No. ][CT 5 1 2] P00B01W 08-22-1999 15:08 BIN=00 BIV=00
INPUT ID = (NO INPUT)
PRINTER ID = 141C1903053430
[GOD:MODLD]
DOT(BK/M-C-Y)
HEAD KATAMUKI (BK-M)

**Figure 5-8. Sample of Head Angular Adjustment Pattern**

***NOTE:*** *In the above figure,* Head Katamuki *means Head Angle.*

4. Loosen the screw securing the printhead on the carriage. (You don't need to remove it completely.)

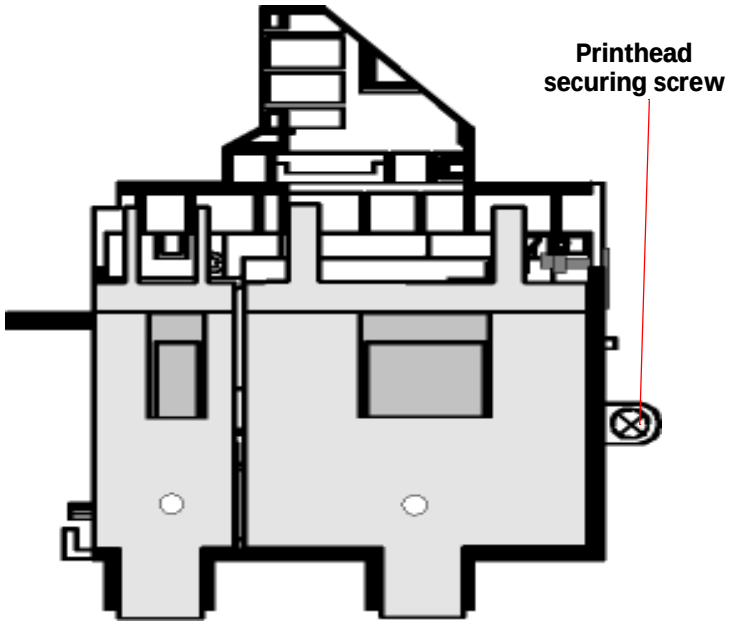



**Figure 5-9. Screw Position**

***NOTE:*** *Make sure to loosen this screw. Otherwise, the printhead angle will not change even if the adjustment lever moves.*

5. Look very closely at the black/magenta lines in the bottom pattern and move the adjustment lever to center the magenta lines between the black lines. The figure below shows how to move the lever to correct a misaligned pattern.

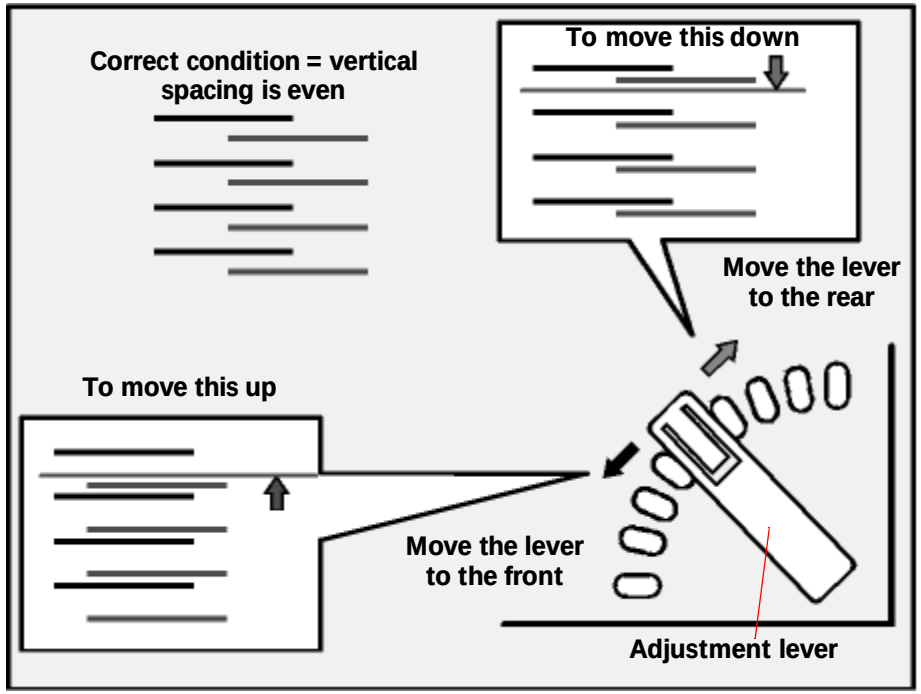



**Figure 5-10. Lever Operation**

6. After changing the position of the adjust lever, select Print - Angular Adj. again from the Production Menu.
7. Verify the pattern on the printout again.
8. Repeat this process until the combination pattern of black/magenta is correct.

9. After completing the adjustment, tighten the printhead screw, and reassemble the Stylus Scan.

### 5.3.8 Ink draining

To drain the ink from the cartridge before transporting it a long distance, follow the steps below.

1. Enter the Production menu as described in “Using the Service-Adjustment Program” on pag e116.
2. On the Production menu (Figure 5-6), select Ink Discharge**. Click OK in the following dialog box.**

**SPECIAL MENU**

To enter the Special menu, follow these steps.

1. Open the Start-up menu as described on pag e117.
2. Double-click Special and click OK.
3. Double-click Counter Clear and clice OK.

**You can also perform a hex dump of the EEPROM data by double-clicking EEPROM DUMP on the Special menu. The printer will print the EEPROM parameters in hexadecimal characters.**

## 5.4 Scanner Adjustment

The scanner mechanism requires no adjustment for any service operation provided you closely follow the specifications in this manual and the instructions in Chapter 4 “Disassembly and Assembly”.

CHAPTER

6

# MAINTENANCE

# 6.1 Overview

This chapter provides information necessary to keep the scanner function in optimum condition constantly and to prevent troubles.

## 6.1.1 Cleaning

Perform cleaning when stain is noticeable. Stain on the document glass, particularly, has direct effect on the scanned image. Therefore, be sure to clean the glass well to remove stain thoroughly.

CAUTION

**Never apply any organic solvent such as thiner and benzine, since there may damage deteriorate plastic and rubber parts.**

- ☐ Outer Cases
  Wipe stain off with a clean cloth which is moisted with water and then squeezed tightly. To remove sever stain, use neutral detergent.
- ☐ Document Glass
  Remove dust and paper debris with a dry clean cloth. If stain is severe or foreign object is stuck, use a cloth absorbed with neutral detergent. If trace is left, wipe it off well with a dry, clean cloth again.

## 6.1.2 Lubrication

### 6.1.2.1 Scanner lubrication points

When the carriage unit needs to be replaced, or the operation sound of the carriage movement becomes noisy, it is necessary to apply lubrication. Following tables show the recommended grease type and lubrication points.

**Table 6-1. Recommended Grease**

| Type | Name | Supply Quantity | Part No. | Specification |
|---|---|---|---|---|
| Grease | G-26 | 40g | B702600001 | E* |

*Note*)* "E" means exclusive product for EPSON. (Not available on the market)

**Table 6-2. Lubrication Points**

| Figure | Lubrication Points | Lubrication |
|---|---|---|
| 6-1 | Transmission Gear Shaft of the CR motor and Driven pulley shaft. | G-26 (1x3mm) |
| 6-1 | Driven Pulley Shaft | G-26(1x3mm) |

CAUTION

**Excessive lubrication may damage the mechanism part or cause the malfunction of the operation.**

### 6.1.2.2 Printer lubrication points

The type and amount of oil and grease used to lubricated the printer parts are determined based on the results of internal evaluations. Therefore, be sure to apply the specified type and amount of oil and grease to the specified part of the printer mechanism during servicing.

CAUTION

- **Never use oil or grease other than those specified in this manual. Use of different types of lubricant can damage the printer and the components.**
- **Never apply a larger amount of lubricant than specified in this manual.**

**Table 6-3. Specified Lubricants**

| Type | Name | EPSON Code | Supplier |
|---|---|---|---|
| Grease | G-26 | B702600001 | EPSON |
| Oil | O-12 | 1038991 | EPSON |

**Table 6-4. Lubrication Point s**

| No. | Standard | Remarks | See page |
|---|---|---|---|
| 1 | <Lubrication Point><br>Contact between “ROLLER, PF” and “PAPER GUIDE, REAR”<br><Lubricant Type> G-26<br><Lubrication Amount><br>A half turn of “ROLLER, PF” | Do not put grease around the paper path.<br>Use a syringe to apply it.<br>Apply grease while rotating “GEAR, 73.6”. | 132 |
| 2 | <Lubrication Point><br>Contact points between “PAPER GUIDE, FRONT” and each roller:<br>“ROLLER, PF” (1 point)<br>“ROLLER, EXIT” (2 points)<br><Lubricant Type> G-26<br><Lubrication Amount><br>10-mm long<br>2-mm long | Lubricate the contact points between the hooks on “PAPER GUIDE, FRONT” and each roller.<br>Avoid applying grease around the paper path.<br>Use a syringe to apply it. | 132 |
| 3 | <Lubrication Point><br>Contact points between the carriage assembly and “FRAME, UPPER”<br><Lubricant Type> G-26<br><Lubrication Amount><br>Range from the HP sensor installation point to the point where “GUIDE PLATE, CABLE” is attached. | Verify that the carriage moves smoothly after lubricating it.<br>Use a syringe to apply it. | 133 |

**Table 6-4. Lubrication Points (cont.)**

| No. | Standard | Remarks | See page |
|---|---|---|---|
| 4 | <Lubrication Point><br>Gears:<br>“GEAR, 73.6”<br>“COMBINATION GEAR, 8, 14.4”<br>“GEAR, 23.2”<br><Lubricant Type> G-26<br><Lubrication Amount><br>1/4 of gear tooth<br>1/3 of gear tooth<br>1/3 of gear tooth<br>1/3 of gear tooth | Rotate the gears after applying grease to evenly distribute it.<br>Use a syringe to apply it. | 133 |
| 5 | <Lubrication Point><br>The shaft for “GEAR, 16, 40.8” on “FRAME, LEFT”<br><Lubricant Type> G-26<br><Lubrication Amount><br>Approximately 5-mm long | Use a syringe to apply it. | 133 |
| 6 | <Lubrication Point><br>Bushings for “ROLLER, PF”<br>Left: Inside the bushing<br>Right: Inside the bushing (near the pump assembly)<br><Lubricant Type> G-26<br><Lubrication Amount><br>Approximately 3 mm diametrically | For the right bushing, apply it from the paper path side, and wipe off any grease sticking out to the cap assembly side.<br>Rotate “ROLLER, PF” after applying grease to evenly distribute it in the bushing.<br>Use a syringe to apply it. | 134 |

**Table 6-4. Lubrication Points (cont.)**

| No. | Standard | Remarks | See page |
|---|---|---|---|
| 7 | <Lubrication Point><br>Both Left/Right Bushings for "ROLLER, EXIT" | Avoid applying grease around the paper path.<br>Use a syringe to apply it. | 134 |
| | <Lubricant Type> G-26 | | |
| | <Lubrication Amount><br>Evenly apply inside the bushings. | | |
| 8 | <Lubrication Point><br>Contact points between "HOLDER, PULLEY, DRIVEN" and "FRAME, UPPER" | Verify that the holder slides only with spring force after applying grease.<br>Use a syringe to apply it. | 135 |
| | <Lubricant Type> G-26 | | |
| | <Lubrication Amount><br>2-mm long for each point | | |
| 9 | <Lubrication Point><br>ASF;<br>The round hole in the right frame of ASF (to hold the roller shaft) | Avoid applying grease to "ROLLER, ASSEMBLY, LD". | 135 |
| | <Lubricant Type> G-26 | | |
| | <Lubrication Amount><br>Evenly apply inside the hole. | | |
| 10 | <Lubrication Point><br>ASF;<br>Contact points between "HOPPER" and "LEVER, HOPPER, RELEASE" | Completely wipe off any grease sticking out to the inner side of ASF. | 135 |
| | <Lubricant Type> G-26 | | |
| | <Lubrication Amount><br>Evenly apply lubrication to the points. | | |

**Table 6-4. Lubrication Points (cont.)**

| No. | Standard | Remarks | See page |
|---|---|---|---|
| 11 | <Lubrication Point><br>The round cutout in the left frame of ASF ("GEAR, 34" is inserted to the cutout.) | Completely wipe off any grease sticking out to the inner side of ASF. | 136 |
| | <Lubricant Type> G-26 | | |
| | <Lubrication Amount><br>Evenly apply inside the hole | | |
| 12 | <Lubrication Point><br>Oil pad in the carriage assembly | Lubricate the oil pad only when:<br>Replacing the carriage assembly<br>Replacing the oil pad<br>Use a precise syringe to apply oil. If you accidentally apply too much oil to the oil pad, throw the pad away and take a new one again.<br>Leave the pad for a while to wait until oil is evenly infiltrated, then install it on the carriage assembly. | 136 |
| | <Lubricant Type> O-12 | | |
| | <Lubrication Amount><br>0.72 ~ 0.77cc (0.65 ~ 0.69g)<br><br>**Note:**<br>This is the amount to be applied to a new oil pad. | | |

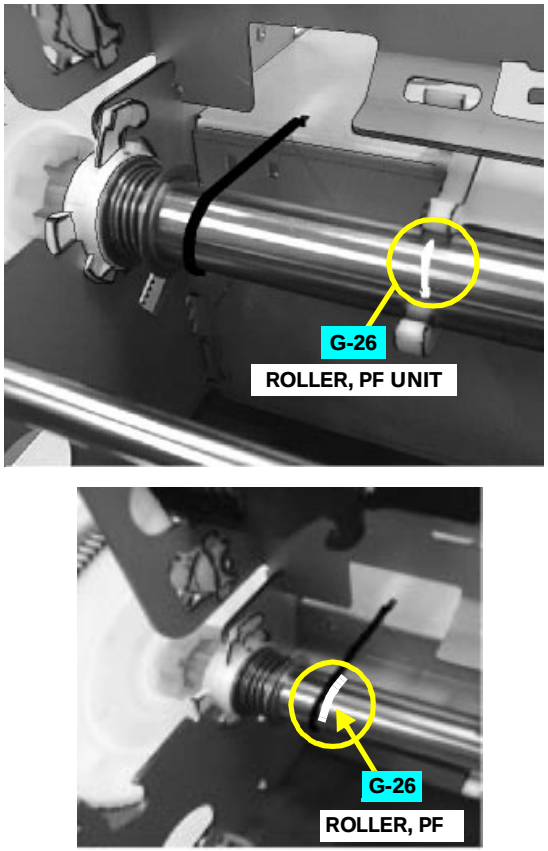



**Figure 6-1. #1 Paper Feed Roller at two places**

**CAUTION**

**When rotating the Paper Feed Roller, only touch the projections on the outside surface of the 73.6 precision gear. Do not touch the teeth of the gear.**

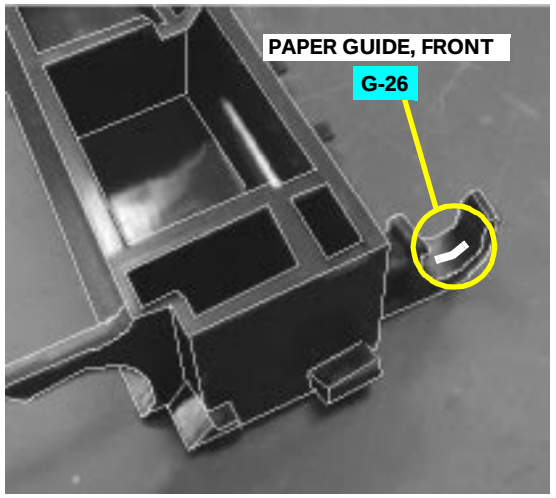



**Figure 6-2. #2 Front Paper Guide - A**

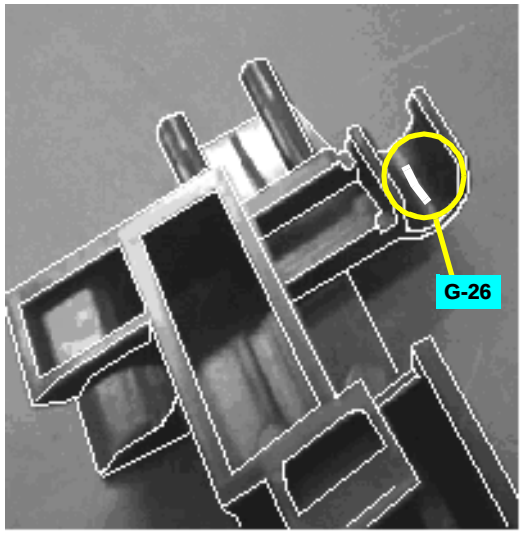



**Figure 6-3. #2 Front Paper Guide - B**

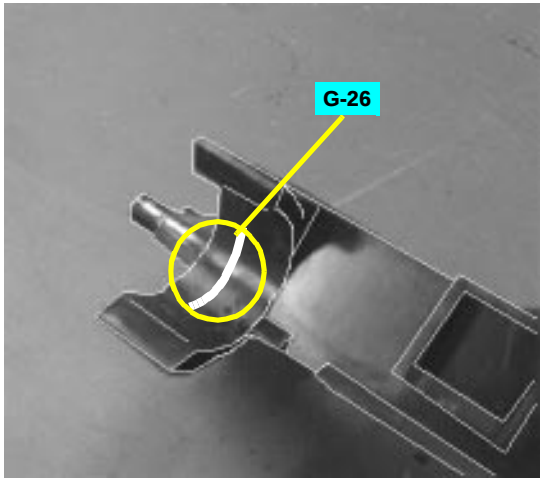



Figure 6-4. #2 Front Paper Guide - C

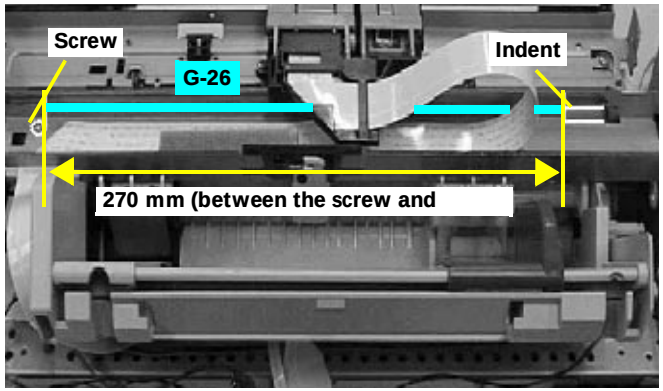



Figure 6-5. #3 Carriage Assembly Contact Point

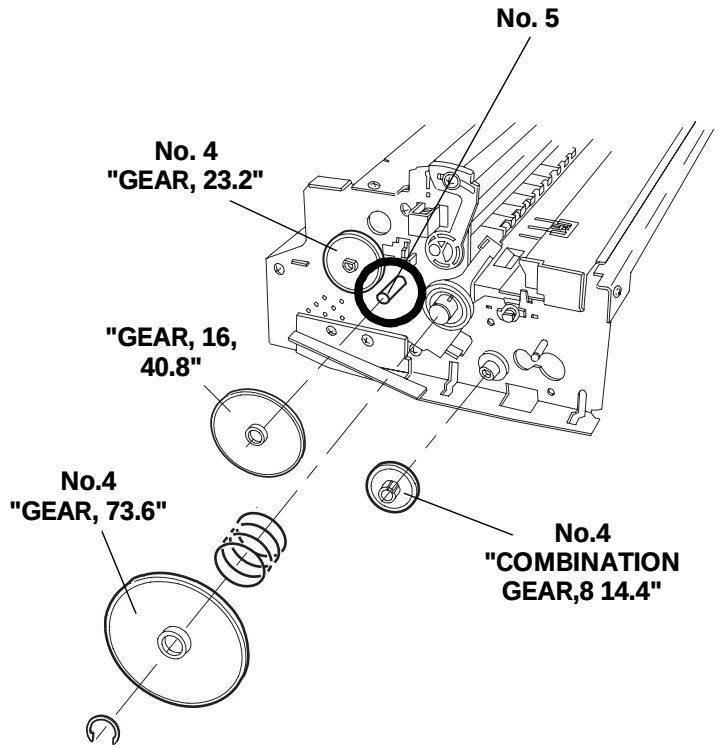



Figure 6-6. #4 Combination Gears and #5 Gear Shaft

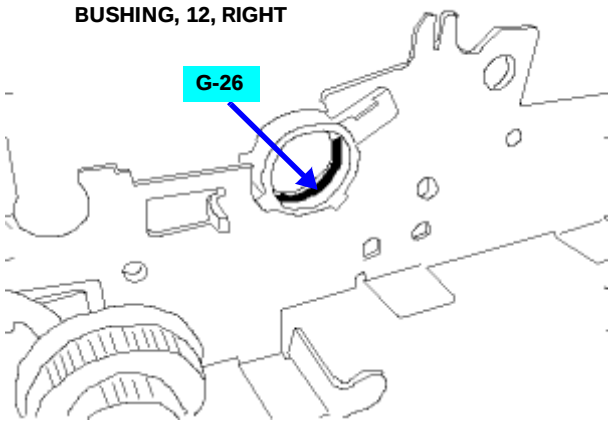



**Figure 6-7. #6 Inside the PF Roller Bushing - Right**

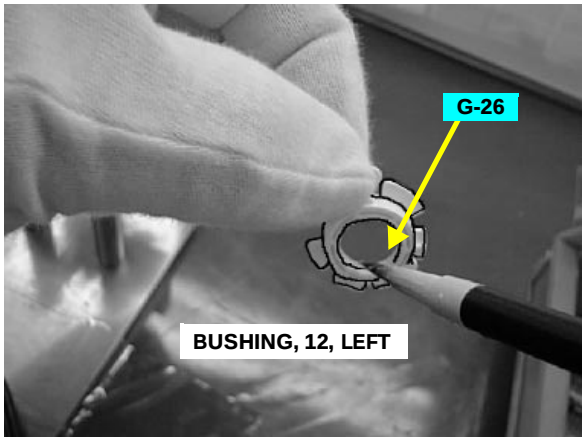
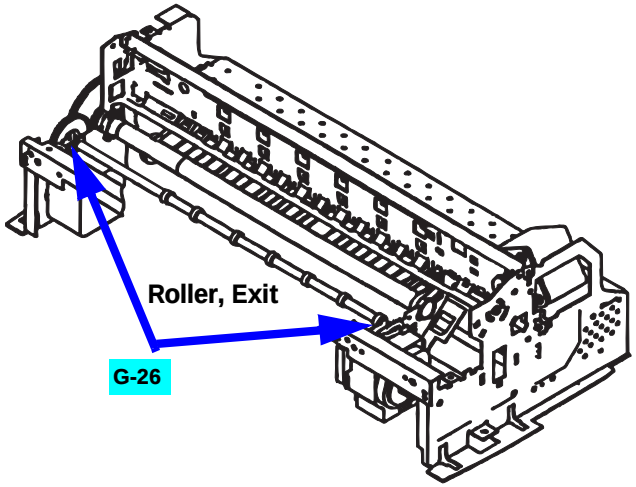



**Figure 6-8. #6 Inside the PF Roller Bushing - Left**



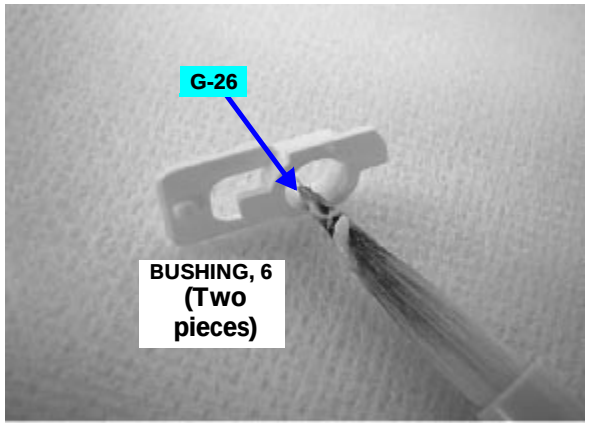




**Figure 6-9. #7 Left & Right Exit Roller Bushings**

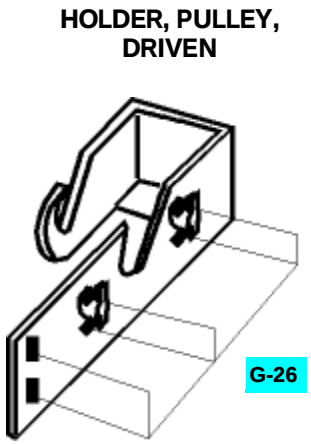



Figure 6-10. #8 Driven Pulley Holder

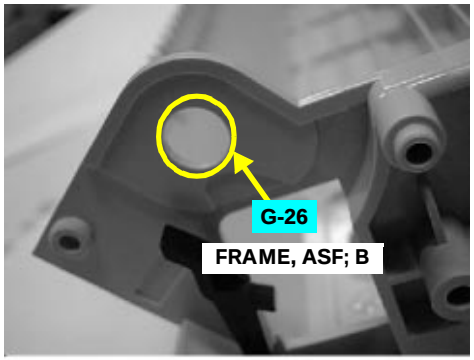



Figure 6-11. #9 ASF Roller Shaft

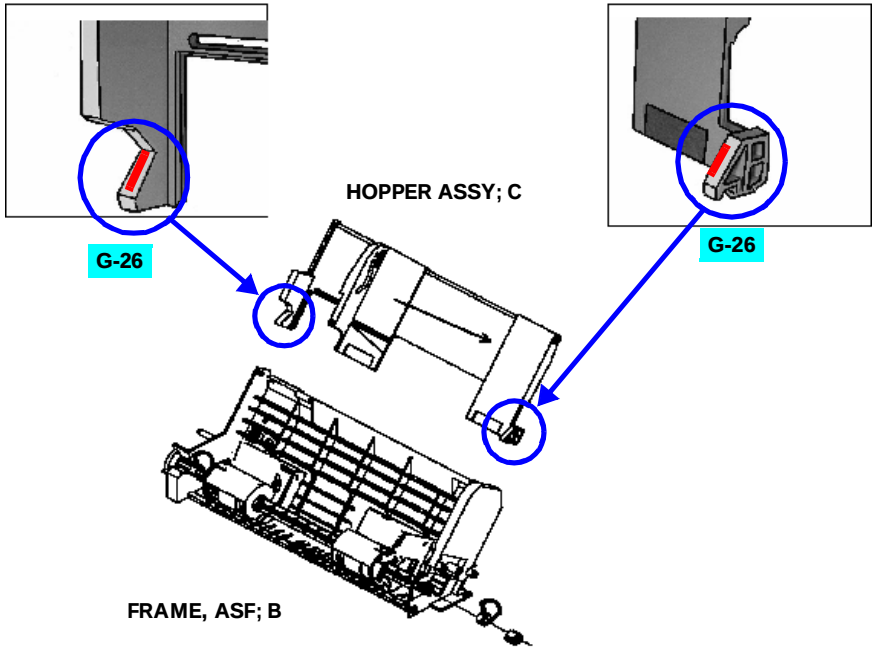



Figure 6-12. #10 ASF Hopper Assembly

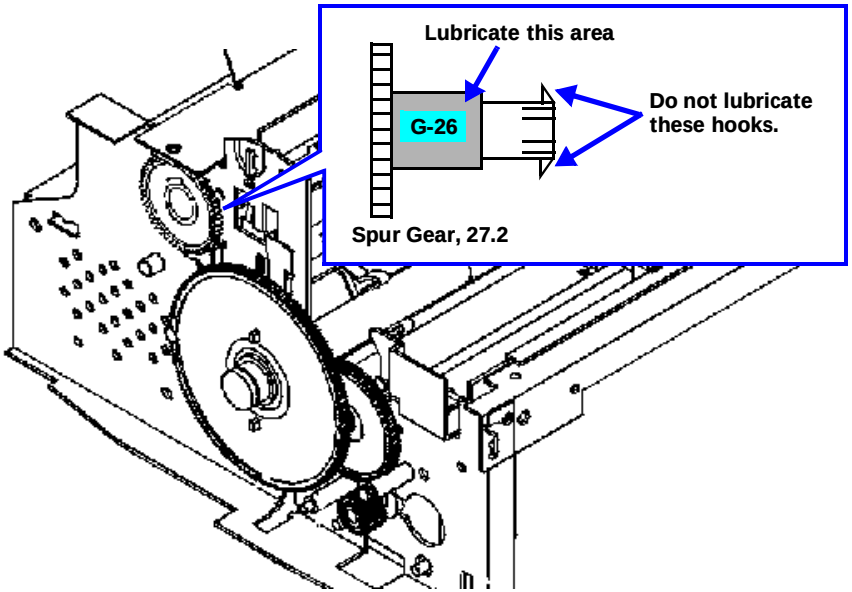



Figure 6-13. #11 Gear 34 (ASF Roller Gear)

*Never apply the oil exceeding 0.6cc.

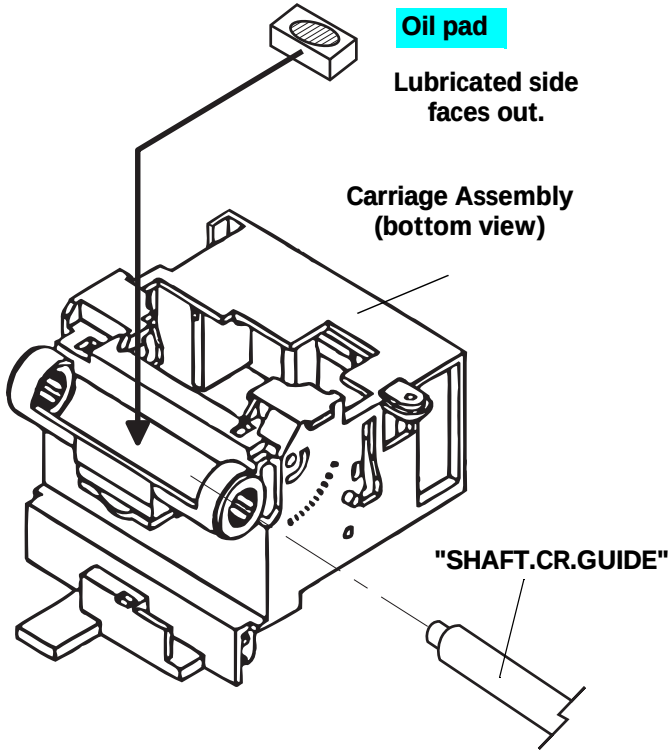
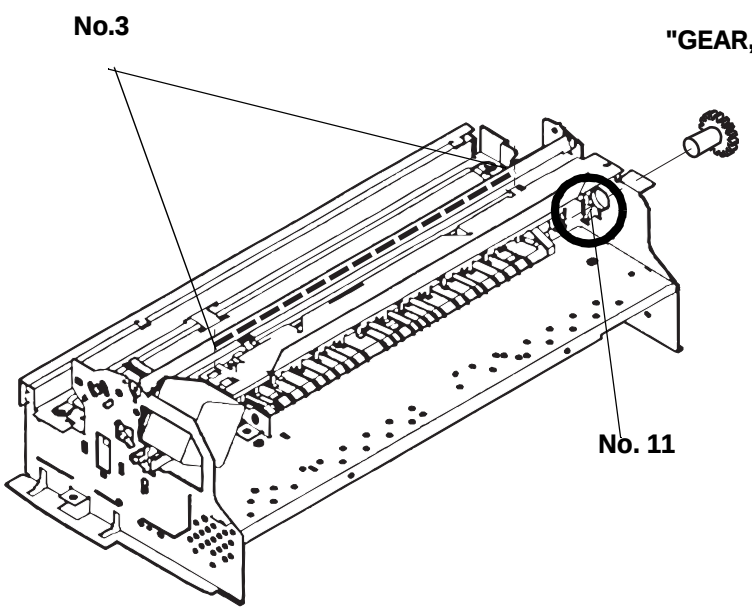
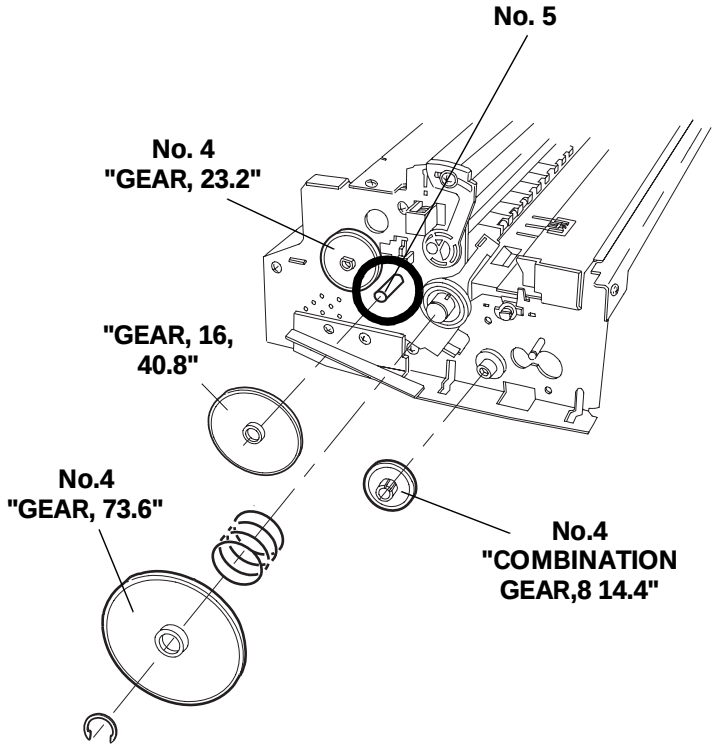


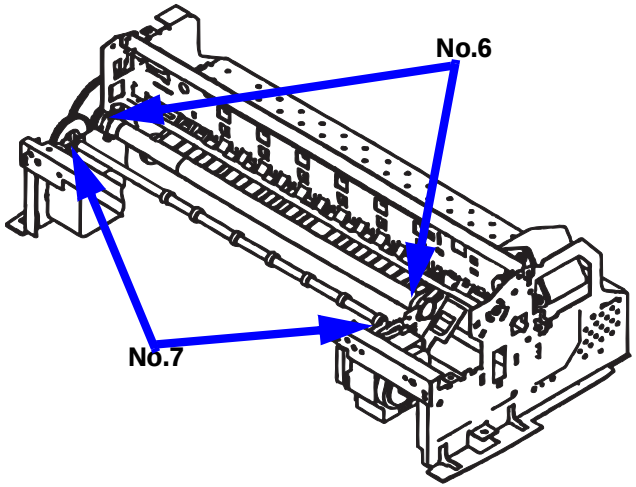

Figure 6-14. #12 Carriage Assembly Oil Pad

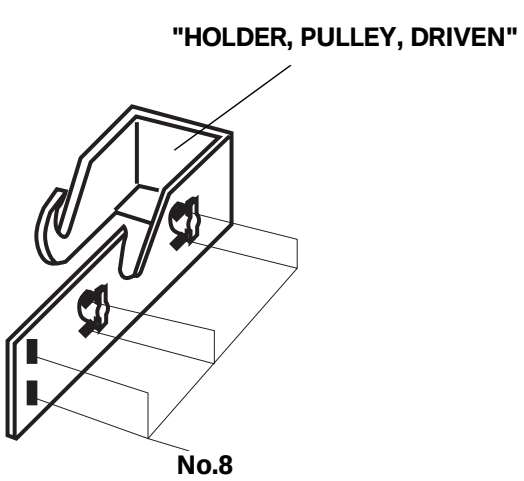
WARNING

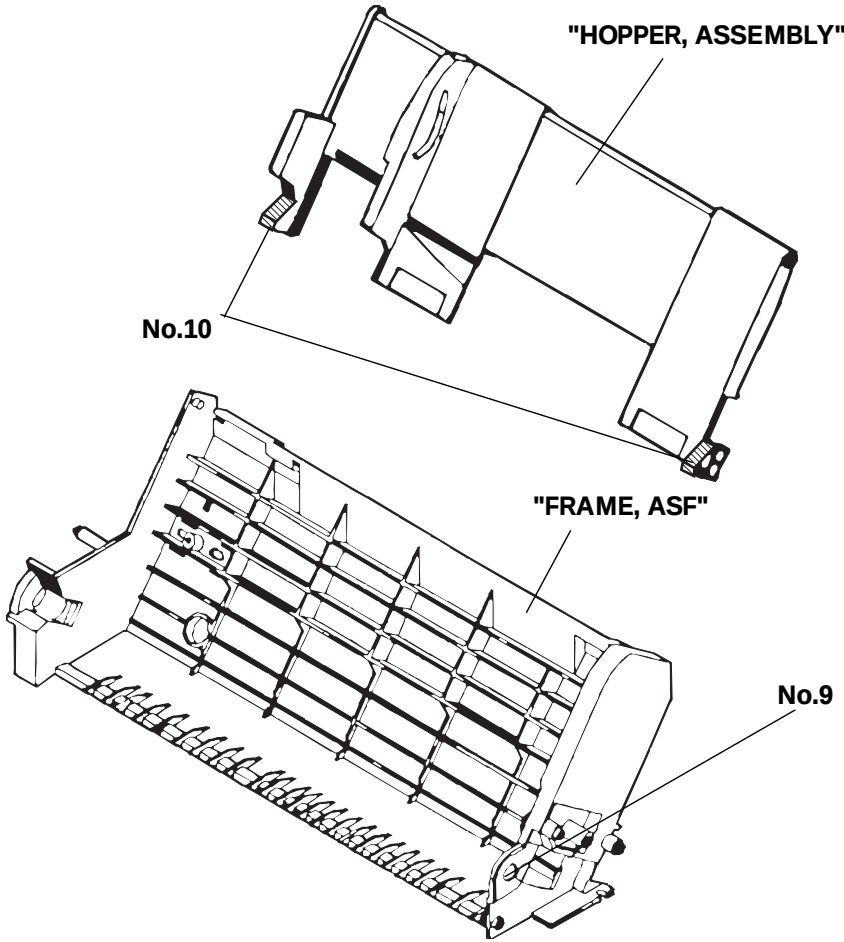
- Never apply oil to the CR guide shaft directly. This may cause fatal damage to the components of the printer.
- Avoid applying oil excessively to the oil pad. This may cause fatal damage to the components of the printer.


No.3
"GEAR, 34"
No. 11


No. 5
No. 4
"GEAR, 23.2"
"GEAR, 16,
40.8"
No.4
"GEAR, 73.6"
No.4
"COMBINATION
GEAR,8 14.4"


No.6
No.7


"HOLDER, PULLEY, DRIVEN"
No.8


"HOPPER, ASSEMBLY"
No.10
"FRAME, ASF"
No.9

### 6.1.2.3 Scanner Mechanism

This chapter provides information necessary to keep the scanner function in optimum condition constantly and to prevent troubles.

When the carriage unit needs to be replaced, or the operation sound of the carriage movement becomes noisy, it is necessary to apply lubrication. Following tables show the recommended grease type and lubrication points.

**Table 6-5. Recommended Grease**

| Type | Name | Supply Quantity | Part No. | Specification |
|---|---|---|---|---|
| Grease | G-26 | 40g | B702600001 | E* |

*Note*)* "E" means exclusive product for EPSON. (Not available on the market.)

**Table 6-6. Lubrication points**

| Figure | Lubrication Points | Lubrication |
|---|---|---|
| 6-1 | Transmission Gear Shaft of the CR motor and Driven pulley shaft. | G-26 (1x3mm) |
| 6-1 | Driven Pulley Shaft | G-26(1x3mm) |

**Excessive lubrication may damage the mechanism part or cause the malfunction of the operation.**

CHAPTER

7

# APPENDIX

## 7.1 Connector

This section provides information on Main board connectors. Figure 7-1, "Cable Connections for Stylus Scan 2500" shows how the main component units are connected.

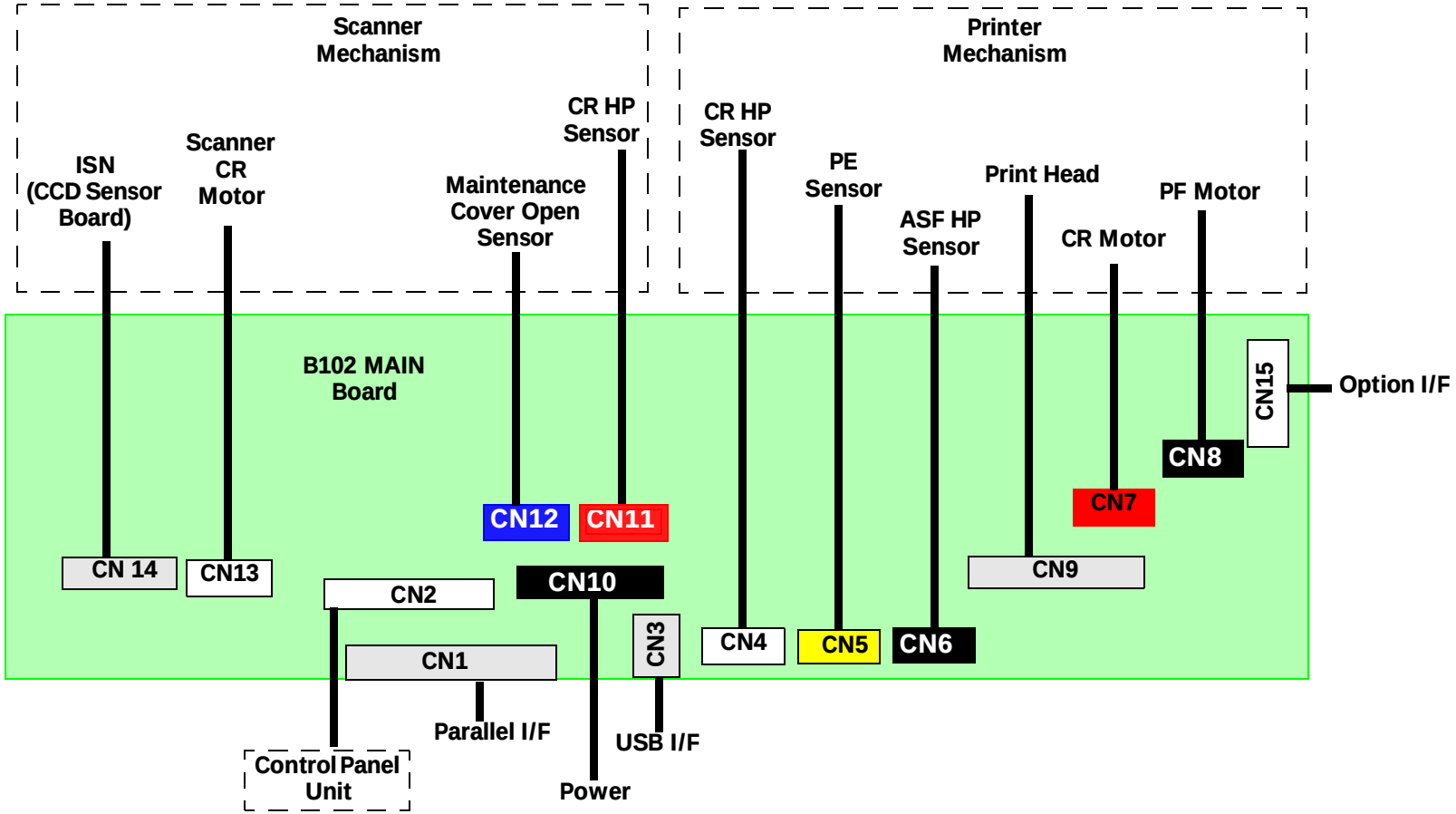



**Figure 7-1. Cable Connections for Stylus Scan 2500**

## 7.1.1 Board Connector Summary

The table below provides board connector summary of Stylus Scan 2500.

**Table 7-1. Circuit Board Connector Summary**

| Connector | Connection | Pin Number | Refer to |
|---|---|---|---|
| B102 MAIN Board | | | |
| CN1 | →Centronics parallel interface | 36-pin | "Printer Interface" on page 20 |
| CN2 | →Control Panel Unit | 21-pin | Table 7-2 on page 143 |
| CN3 | →USB interface | 4-pin | "Printer Interface" on page 20 |
| CN4 | →Printer Mechanism (HP sensor) | 3-pin | Table 7-3 on page 143 |
| CN5 | →Printer Mechanism (PE sensor) | 3-pin | Table 7-4 on page 143 |
| CN6 | →Printer Mechanism (ASF sensor) | 3-pin | Table 7-5 on page 143 |
| CN7 | →Printer Mechanism (CR motor) | 4-pin | Table 7-6 on page 143 |
| CN8 | →Printer Mechanism (PF motor) | 4-pin | Table 7-7 on page 144 |
| CN9 | →Printer Mechanism (Printhead) | 24-pin | Table 7-8 on page 144 |
| CN10 | →B101 PSB/PSE board/AC inlet | 12-pin | Table 7-9 on page 144 |
| CN11 | →Scanner Mechanism (HP sensor) | 2-pin | Table 7-10 on page 144 |
| CN12 | →Scanner Mechanism (Maintenance cover open sensor) | 3-pin | Table 7-11 on page 145 |
| CN13 | →Scanner Mechanism (CR motor) | 6-pin | Table 7-12 on page 145 |
| CN14 | →Scanner Mechanism (CCD sensor board/ISN) | 14-pin | Table 7-13 on page 145 |

**Table 7-1. Circuit Board Connector Summary (cont.)**

| Connector | Connection | Pin Number | Refer to |
|---|---|---|---|
| CN15 | Scanner option | 7-pin | Table 7-14, "Connector Pin Assignment-CN15," on page 145 |
| B102 PSB/PSE Board | | | |
| CN1 | →AC inlet | 2-pin | Table 7-15 on page 146 |
| CN2 | →Power to B102 MAIN Board | 12-pin | Table 7-9 on page 144 |
| Control Panel Board | | | |
| CN1 | →B102 MAIN Board | 14-pin | Table 7-2 on page 143 |

## 7.1.2 Connector Pin Assignment

Tables in this section provide connector pin assignment of the Stylus Scan 2500.

Signals of each connector on the B102 MAIN Board are listed below.

**Table 7-2. Connector Pin Assignment-CN2**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | GND | O | Ground |
| 2 | LD0 | O | |
| 3 | GND | O | Ground |
| 4 | LD1 | O | |
| 5 | LED0 | O | LED drive signal (0) |
| 6 | LD2 | O | |
| 7 | LED1 | O | LED drive signal (1) |
| 8 | LD3 | O | |
| 9 | LED2 | O | LED drive signal (2) |
| 10 | LA0 | O | |
| 11 | LED3 | O | LED drive signal (3) |
| 12 | LCS | O | |
| 13 | LED4 | O | LED drive signal (4) |
| 14 | LWE | O | |
| 15 | +5V | O | |
| 16 | LRD | O | |
| 17 | +5V | O | |
| 18 | LCLK | O | |
| 19 | SW1 | I | Panel switch input (1) |
| 20 | SW2 | I | Panel switch input (2) |
| 21 | SW3 | I | Panel switch input (3) |
| 22 | SW4 | I | Panel switch input (4) |
| 23 | SW6 | I | Panel switch input (6) |
| 24 | SW7 | I | Panel switch input (7) |
| 25 | SW8 | I | Panel switch input (8) |
| 26 | SW9 | I | Panel switch input (9) |
| 27 | SW10 | I | Panel switch input (10) |

**Table 7-2. Connector Pin Assignment-CN2 (cont.)**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 28 | SW11 | I | Panel switch input (11) |
| 29 | SW12 | I | Panel switch input (12) |
| 30 | SW5 | I | Panel switch input (5) |
| 31 | SW13 | I | Panel switch input (13) |
| 32 | SW14 | I | Panel switch input (14) |

**Table 7-3. Connector Pin Assignment-CN4**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | HP | I | Sensor detect signal |
| 2 | GND | O | Ground |
| 3 | HPV | O | Sensor power supply (+5V) |

**Table 7-4. Connector Pin Assignment-CN5**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | PE | I | Sensor detect signal |
| 2 | GND | O | Ground |
| 3 | PEV | O | Sensor power supply (+5V) |

**Table 7-5. Connector Pin Assignment-CN6**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | ASF | I | Sensor detect signal |
| 2 | GND | O | Ground |
| 3 | ASFV | O | Sensor power supply (+5V) |

**Table 7-6. Connector Pin Assignment-CN7**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | CR-A | O | Phase drive signal (A) |
| 2 | CR-B | O | Phase drive signal (B) |
| 3 | CR-/A | O | Phase drive signal (/A) |
| 4 | CR-/B | O | Phase drive signal (/B) |

**Table 7-7. Connector Pin Assignment-CN8**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | PF-A | O | Phase drive signal (A) |
| 2 | PF-B | O | Phase drive signal (B) |
| 3 | PF-/A | O | Phase drive signal (/A) |
| 4 | PF-/B | O | Phase drive signal (/B) |

**Table 7-8. Connector Pin Assignment-CN9**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | COB | I | I/C Black detect |
| 2 | COC | I | I/C Color detect |
| 3 | THM | I | Thermometer detect system |
| 4 | GND | O | Ground |
| 5 | LAT | O | Head data latch pulse output |
| 6 | GND | O | Ground |
| 7 | SI6 | O | Head data output (6) |
| 8 | SI5 | O | Head data output (5) |
| 9 | SI4 | O | Head data output (4) |
| 10 | SI3 | O | Head data output (3) |
| 11 | SI2 | O | Head data output (2) |
| 12 | SI1 | O | Head data output (1) |
| 13 | GND | O | Ground |
| 14 | CLK | O | Clock pulse for head data transfer |
| 15 | GND | O | Ground |
| 16 | NCHG | O | Head all on pulse output |
| 17 | GND | O | Ground |
| 18 | VDD | O | Logic power supply (+5V) |
| 19 | GND2 | O | Ground |
| 20 | GND2 | O | Ground |
| 21 | GND2 | O | Ground |
| 22 | GND2 | O | Ground |
| 23 | COM | O | Head drive power supply |
| 24 | COM | O | Head drive power supply |

**Table 7-8. Connector Pin Assignment-CN9 (cont.)**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 25 | COM | O | Head drive power supply |
| 26 | COM | O | Head drive power supply |
| 27 | VHV | O | Head drive voltage control signal |

**Table 7-9. Connector Pin Assignment-CN10**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | +12V | I | Mechanism drive power supply |
| 2 | +24V | I | Mechanism drive power supply |
| 3 | GND | I | Ground |
| 4 | +24V | I | Mechanism drive power supply |
| 5 | GND | I | Ground |
| 6 | GND | I | Ground |
| 7 | +42V | I | Mechanical drive power supply |
| 8 | +42V | I | Mechanical drive power supply |
| 9 | +3.3V | I | Logic power supply |
| 10 | +3.3V | I | Logic power supply |
| 11 | +5V | I | Logic power supply |
| 12 | +5V | I | Logic power supply |
| 13 | GND | I | Ground |
| 14 | GND | I | Ground |
| 15 | GND | I | Ground |
| 16 | FAN42 | O | Not needed |
| 17 | SWO | I | |
| 18 | PSC | O | Power supply switch output signal |

**Table 7-10. Connector Pin Assignment-CN11**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | HP | I | Sensor detect system |
| 2 | GND | O | Ground |
| 3 | HPWR | O | Sensor power supply (+5V) |

**Table 7-11. Connector Pin Assignment-CN12**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | COPEN | I | Sensor signal |
| 2 | GND | O | Ground |
| 3 | CPWR | O | +5V |

**Table 7-12. Connector Pin Assignment-CN13**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | Bx | O | Scanner CR Motor $\overline{B}$ |
| 2 | Ax | O | Scanner CR Motor $\overline{A}$ |
| 3 | B | O | Scanner CR Motor B |
| 4 | A | O | Scanner CR Motor A |

**Table 7-13. Connector Pin Assignment-CN1 4**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | DGND | O | |
| 2 | 24V | O | |
| 3 | VCC | O | |
| 4 | RS | O | |
| 5 | PH2 | O | |
| 6 | PH1 | O | |
| 7 | 12VC | O | |
| 8 | SH | O | |
| 9 | G-SH | O | |
| 10 | R-SH | O | |
| 11 | B-SH | O | |
| 12 | AGND | O | |
| 13 | VOG | I | Green signal |
| 14 | AGND | O | |
| 15 | VOR | I | Red signal |
| 16 | AGND | O | |
| 17 | VOB | I | Blue signal |
| 18 | AGND | O | |

**Table 7-14. Connector Pin Assignment-CN15**

| Pin No. | Signal Name | I/O | Function |
|---|---|---|---|
| 1 | +5V | O | |
| 2 | GND | O | Ground |
| 3 | +24V | O | |
| 4 | LOD | O | |
| 5 | GND | O | Ground |
| 6 | RxD | I | |
| 7 | TxD | O | |
| 8 | SCK | O | |

## 7.2 EEPROM Address Map

This section provides EEPROM address map for the Stylus Scan.

**Table 7-15. Printer Unit EEPROM Address Map**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 00H | Password 0 | | 0FH | - |
| 01H | | | 5AH | - |
| 02H | Reserved | | 41H | - |
| 03H | Reserved | | 00H | (*1) |
| 04H | CG | 0: STD, 1: NLSP | 00H | (*1) |
| 05H | Market ID | 0: Standard (World)<br>2: Custom | 00H | (*1) |
| 06H | Custom EEPROM sub number | | 00H | 00H |
| 07H | | | 00H | 00H |
| 08H | | | 00H | 00H |
| 09H | | | 00H | 00H |
| 0AH | Head actuator rank ID for VhN | | 00H | (*1) |
| 0BH | Head actuator rank ID for Vhμ | | 00H | (*1) |
| 0CH | Head actuator rank ID for VhL | | 00H | (*1) |
| 0DH | Head actuator rank ID for AR | | 00H | (*1) |
| 0EH | Head rank MW-ID | | 00H | (*1) |
| 0FH | Reserved | | 00H | - |
| 10H | Reserved | | 00H | - |
| 11H | Reserved | | 00H | - |
| 12H | Head actuator rank ID for lwAB | | 00H | (*1) |
| 13H | Head actuator rank ID for lwCD | | 00H | (*1) |

**Table 7-15. Printer Unit EEPROM Address Map (cont.)**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 14H | Head actuator rank ID for lwEF | | 00H | (*1) |
| 15H | Bi-D Adjustment data for Normal-dot | -36<=n=<+36<br>(by 1/1440 inch) | 00H | (*1) |
| 16H | Bi-D Adjustment data for Micro-dot | -36<=n=<+36<br>(by 1/1440 inch) | 00H | (*1) |
| 17H | Bi-D Adjustment data for Variable-dot | -36<=n=<+36<br>(by 1/1440 inch) | 00H | (*1) |
| 18H | Uni-Dadjustment data | -36<=n=<+36<br>(by 1/1440 inch) | 00H | (*1) |
| 19H | Reserved | | 00H | - |
| 1AH | Reserved | | 00H | - |
| 1BH | 1st dot position adjustment data | -40<=n=<+40<br>(by 1/1440 inch) | 00H | (*1) |
| 1CH | Carriage speed adjustment data | -4<=n<=+4<br>(by G.A. timer unit) | 00H | (*1) |
| 1DH | Carriage phase on Home | | 00H | - |
| 1EH | Paper sensor adjustment data | -127<=n<=+127<br>(by 1/720 inch) | 00H | (*1) |
| 1FH | ERROR Code | | 00H | 00H |
| 20H | CPSI password | | 00H | 00H |
| 21H | | | 00H | 00H |
| 22H | | | 00H | 00H |
| 23H | | | 00H | 00H |
| 24H | CPSI license flag | 0: disable 1: enable | 00H | 00H |
| 25H | CPSI font license | 0: disable 1: enable | 00H | 00H |
| 26H | Interface selection | 0: Auto, 1: Parallel<br>2: Serial, 3: USB | 00H | 00H<br>(*2) |

**Table 7-15. Printer Unit EEPROM Address Map (cont.)**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 27H | Interface time-out | 0 to 255 (by second, value of 0 means 10 seconds) | 0AH | 0AH |
| 28H | Compatibility speed | 0: Fast, 1: Slow<br>2: Special-1, 3: Special-2 | 00H | 00H |
| 29H | ECP speed *3 | 0: Fast, 1: Slow | 00H | 00H |
| 2AH | IEEE1284 for Parallel | 0: Auto, 1: On<br>2: Off | 00H | 00H |
| 2BH | I/F Control flags | bit 1: ECP mode (0=Off, 1=On) *4<br>bit 0: IEEE1284 mode (0=On, 1=Off) *5 | 00H | 00H |
| 2CH | IEEE1284 for USB | 0: Auto, 1: On<br>2: Off | 00H | 01H |
| 2DH | Reserved | | 00H | - |
| 2EH | Reserved | | 00H | - |
| 2FH | Reserved | | 00H | - |
| 30H | Reserved | | 00H | 02H |
| 31H | Reserved | | 00H | 00H |
| 32H | Print direction control | 0: Bi-D<br>1: Uni-D<br>2: Auto | 02H | 02H |
| 33H | CG table | 8: PC437, 10: PC850 | 08H | 08H |
| 34H | Auto LF, Network I/F mode | bit1: Network I/F mode (0=0ff, 1=On),<br>bit0: Auto line feed (0=Off, 1=On) | 00H | 00H |
| 35H | Panel mask function | bit 7: Entry Self-Test<br>bit 6: Entry Hex-Dump<br>bit 5: Extended settings<br>bit 4: Reserved<br>bit 3: Reserved<br>bit 2: Cleaning<br>bit 1: Replace I/C<br>bit 0: Load/Eject | 00H | 00H |

**Table 7-15. Printer Unit EEPROM Address Map (cont.)**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 36H | Top margin | 42 to 44x360 (by 1/360 inch) | 00H | 00H |
| 37H | | | 78H | 78H |
| 38H | Bottom margin | 1244 to 44x360 (by 1/360 inch) | IEH | IEH |
| 39H | | | F0H | F0H |
| 3AH | Page length | 1244 to 44x360 (by 1/360 inch) | IEH | IEH |
| 3BH | | | F0H | F0H |
| 3CH | Reserved | | 00H | - |
| 3DH | Reserved | | 00H | - |
| 3EH | Reserved | | 00H | - |
| 3FH | Reserved | | 00H | - |
| 40H | Password 1 | | 0FH | - |
| 41H | | | 5AH | - |
| 42H | Ink flag 1 | bit 7: Reserved<br>bit 6: black one-time<br>bit 5: color one-time<br>bit 4: Initial fill required<br>bit 3: Reserved<br>bit 2: ink cleaning seq.<br>Bit 1: black CL required<br>bit 0: color CL required | 00H | 00H |
| 43H | Ink flag 2 | bit 2: YMC cartridge changed and cleaned<br>bit 1: Black cartridge changed and cleaned<br>bit 0: Black cartridge changed and cleaned | 00H | 00H |
| 44H | Ink counter Cb | | 00H | 00H |
| 45H | | | 00H | 00H |
| 46H | | | 00H | 00H |
| 47H | | | 00H | 00H |

**Table 7-15. Printer Unit EEPROM Address Map (cont.)**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 48H | Ink counter Cy | | 00H | 00H |
| 49H | | | 00H | 00H |
| 4AH | | | 00H | 00H |
| 4BH | | | 00H | 00H |
| 4CH | Ink counter Cm | | 00H | 00H |
| 4DH | | | 00H | 00H |
| 4EH | | | 00H | 00H |
| 4FH | | | 00H | 00H |
| 50H | Ink counter Cc | | 00H | 00H |
| 51H | | | 00H | 00H |
| 52H | | | 00H | 00H |
| 53H | | | 00H | 00H |
| 54H | Ink counter Clm | | 00H | 00H |
| 55H | | | 00H | 00H |
| 56H | | | 00H | 00H |
| 57H | | | 00H | 00H |
| 58H | Ink counter Clc | | 00H | 00H |
| 59H | | | 00H | 00H |
| 5AH | | | 00H | 00H |
| 5BH | | | 00H | 00H |
| 5CH | Ink counter Rb | | 00H | 00H |
| 5DH | | | 00H | 00H |
| 5EH | Ink counter Ry | | 00H | 00H |
| 5FH | | | 00H | 00H |
| 60H | Ink counter A | | 00H | 00H(*2) |
| 61H | | | 00H | 00H(*2) |

**Table 7-15. Printer Unit EEPROM Address Map (cont.)**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 62H | Power off time | | 00H | 00H(*2) |
| 63H | | | 00H | 00H(*2) |
| 64H | CL time | | 00H | 00H(*2) |
| 65H | | | 00H | 00H(*2) |
| 66H | Accumulated print time | | 00H | 00H |
| 67H | | | 00H | 00H |
| 68H | Reserved | | 00H | ^ |
| 69H | Reserved | | 00H | ^ |

**Table 7-15. Printer Unit EEPROM Address Map (cont.)**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 6AH | Printer-ID Strings [22] | | 00H | 00H |
| 6BH | | | 00H | 00H |
| 6CH | | | 00H | 00H |
| 6DH | | | 00H | 00H |
| 6EH | | | 00H | 00H |
| 6FH | | | 00H | 00H |
| 70H | | | 00H | 00H |
| 71H | | | 00H | 00H |
| 72H | | | 00H | 00H |
| 73H | | | 00H | 00H |
| 74H | | | 00H | 00H |
| 75H | | | 00H | 00H |
| 76H | | | 00H | 00H |
| 77H | | | 00H | 00H |
| 78H | | | 00H | 00H |
| 79H | | | 00H | 00H |
| 7AH | | | 00H | 00H |
| 7BH | | | 00H | 00H |
| 7CH | | | 00H | 00H |
| 7DH | | | 00H | 00H |
| 7EH | | | 00H | 00H |
| 7FH | | | 00H | 00H |

*1: Adjusted at factory

*2: Initialized after panel initialization of EEPROM is performed.

*3: BUSY signal delay time form fall-edge of a -STB signal.
(Fast: Maximum 1MB/s, Slow: Maximum 600KB/s

*4: Select IEEE1284 transfer mode. (ECP or Nibble)

*5: Enable or disable reverse transfer. (When disabled, ignore -SLIN signal

**Table 7-16. System Unit EEPROM Map**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 00H | EEPROM Mapping revision *1 | R4C4270= H | 00H | -*1 |
| 01H | | R4C4270= A | 00H | -*1 |
| 02H | | R4C4270= xxH | 00H | -*1 |
| 03H | | R4C4270= xxH | 00H | -*1 |
| 04H | Error code | TBD | 00H | 00H*1 |
| 05H | | | 00H | 00H*1 |
| 06H | | TBD | 00H | - |
| 07H | | | 00H | - |
| 08H | Endulance Test mode | 0: enable (default)<br>1: disable | 00H | 00H |
| 09H | Power-on sequence | 0: Normal<br>1: Skip scanner initialize | 00H | 00H |
| 0AH | Reserved | | 00H | (*1) |
| 0BH | Reserved | | 00H | (*1) |
| 0CH | Reserved | | 00H | (*1) |
| 0DH | Reserved | | 00H | (*1) |
| 0EH | Reserved | | 00H | (*1) |
| 0FH | Reserved | | 00H | - |

**Table 7-16. System Unit EEPROM Map**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 10H | Serial Number (Reserved) | Not used | 00H | - |
| 11H | | | 00H | - |
| 12H | | | 00H | - |
| 13H | | | 00H | - |
| 14H | | | 00H | - |
| 15H | | | 00H | - |
| 16H | | | 00H | - |
| 17H | | | 00H | - |
| 18H | | | 00H | - |
| 19H | | | 00H | - |
| 1AH | | | 00H | - |
| 1BH | | | 00H | - |
| 1CH | | | 00H | - |
| 1DH | | | 00H | - |
| 1EH | | | 00H | - |
| 1FH | | | 00H | - |
| 20H | Reserved | | 00H | - |
| 21H | Interface time-out (Reserved) | Not used | 00H | 00H*1 |
| 22H | Compatibility speed | 0: Fast 1: Slow<br>2: Special-1 3: Special-2 | 00H | 00H |
| 23H | ECP speed (Reserved) | Not used | 00H | - |
| 24H | 1284 I/F Control flags | 0: Auto (Default)<br>1: NotD4 (Printer Direct Mode)<br>2: Printer (Direct mode with QualitySW<br>-[PowerSW+QualitySW]: NotD4(P.D.M.)<br>-[PowerSW] : Auto | 00H | 00H*1 |

**Table 7-16. System Unit EEPROM Map**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 25H | Reserved | | 00H | - |
| 26H | Reserved | | 00H | - |
| 27H | Reserved | | 00H | - |
| 28H | Reserved | | 00H | - |
| 29H | Reserved | | 00H | - |
| 2AH | Device ID strings [22] *2 | | 00H | 00H |
| 2BH | | | 00H | 00H |
| 2CH | | | 00H | 00H |
| 2DH | | | 00H | 00H |
| 2EH | | | 00H | 00H |
| 2FH | | | 00H | 00H |
| 30H | | | 00H | 00H |
| 31H | | | 00H | 00H |
| 32H | | | 00H | 00H |
| 33H | | | 00H | 00H |
| 34H | | | 00H | 00H |
| 35H | | | 00H | 00H |
| 36H | | | 00H | 00H |
| 37H | | | 00H | 00H |
| 38H | | | 00H | 00H |
| 39H | | | 00H | 00H |
| 3AH | | | 00H | 00H |
| 3BH | | | 00H | 00H |
| 3CH | | | 00H | 00H |
| 3DH | | | 00H | 00H |
| 3EH | | | 00H | 00H |
| 3FH | | | 00H | 00H |

**Table 7-16. System Unit EEPROM Map**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 40H | Paper size | 0:A4 1:B5 2:A6<br>3:Letter 4:Half L 5:5x8 | 00H | 00H*4 |
| 41H | Reserved (R4C4280) | | 00H | - |
| 42H | Bottom Margin*3 | 0:14mm (R4C4270 default)<br>1: 3mm (R4C4280 default) | 00H | 00H*4 |
| 43H | Language *3 | 0: English 1:German<br>2:French 3:Italian<br>4:Spanish 5:Portuguese | 00H | 00H*4 |
| 44H | Reserved | | 00H | 00H |
| 45H | Reserved | | 00H | 00H |
| 46H | Reserved | | 00H | 00H |
| 47H | Reserved | | 00H | 00H |
| 48H | Reserved | | 00H | 00H |
| 49H | Reserved | | 00H | 00H |
| 4AH | Reserved | | 00H | 00H |
| 4BH | Reserved | | 00H | 00H |
| 4CH | Reserved | | 00H | 00H |
| 4DH | Reserved | | 00H | 00H |
| 4EH | Reserved | | 00H | 00H |
| 4FH | Reserved | | 00H | 00H |
| 50H | Reserved | | 00H | 00H |
| 51H | Reserved | | 00H | 00H |
| 52H | Reserved | | 00H | 00H |
| 53H | Reserved | | 00H | 00H |
| 54H | Reserved | | 00H | 00H |
| 55H | Reserved | | 00H | 00H |
| 56H | Reserved | | 00H | 00H |
| 57H | Reserved | | 00H | 00H |

**Table 7-16. System Unit EEPROM Map**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 58H | Reserved | | 00H | 00H |
| 59H | Reserved | | 00H | 00H |
| 5AH | Reserved | | 00H | 00H |
| 5BH | Reserved | | 00H | 00H |
| 5CH | Reserved | | 00H | 00H |
| 5DH | Reserved | | 00H | 00H |
| 5EH | Reserved | | 00H | 00H |
| 5FH | Reserved | | 00H | 00H |
| 60H | Reserved | | 00H | 00H |
| 61H | Reserved | | 00H | 00H |
| 62H | Reserved | | 00H | 00H |
| 63H | Reserved | | 00H | 00H |
| 64H | Reserved | | 00H | 00H |
| 65H | Reserved | | 00H | 00H |
| 66H | Reserved | | 00H | 00H |
| 67H | Reserved | | 00H | 00H |
| 68H | Reserved | | 00H | 00H |
| 69H | Reserved | | 00H | 00H |
| 6AH | Reserved | | 00H | 00H |
| 6BH | Reserved | | 00H | 00H |
| 6CH | Reserved | | 00H | 00H |
| 6DH | Reserved | | 00H | 00H |
| 6EH | Reserved | | 00H | 00H |
| 6FH | Reserved | | 00H | 00H |
| 70H | Reserved | | 00H | 00H |
| 71H | Reserved | | 00H | 00H |
| 72H | Reserved | | 00H | 00H |

**Table 7-16. System Unit EEPROM Map**

| Address | Explanation | Setting | QPIT Settings | Factory Settings |
|---|---|---|---|---|
| 73H | Reserved | | 00H | 00H |
| 74H | Reserved | | 00H | 00H |
| 75H | Reserved | | 00H | 00H |
| 76H | Reserved | | 00H | 00H |
| 77H | Reserved | | 00H | 00H |
| 78H | Reserved | | 00H | 00H |
| 79H | Reserved | | 00H | 00H |
| 7AH | Reserved | | 00H | 00H |
| 7BH | Reserved | | 00H | 00H |
| 7CH | Reserved | | 00H | 00H |
| 7DH | Reserved | | 00H | 00H |
| 7EH | | | 00H | 00H |
| 7FH | | | 00H | 00H |

*1: Used ROM default settings in case of mismatch with EEPROM Map Version

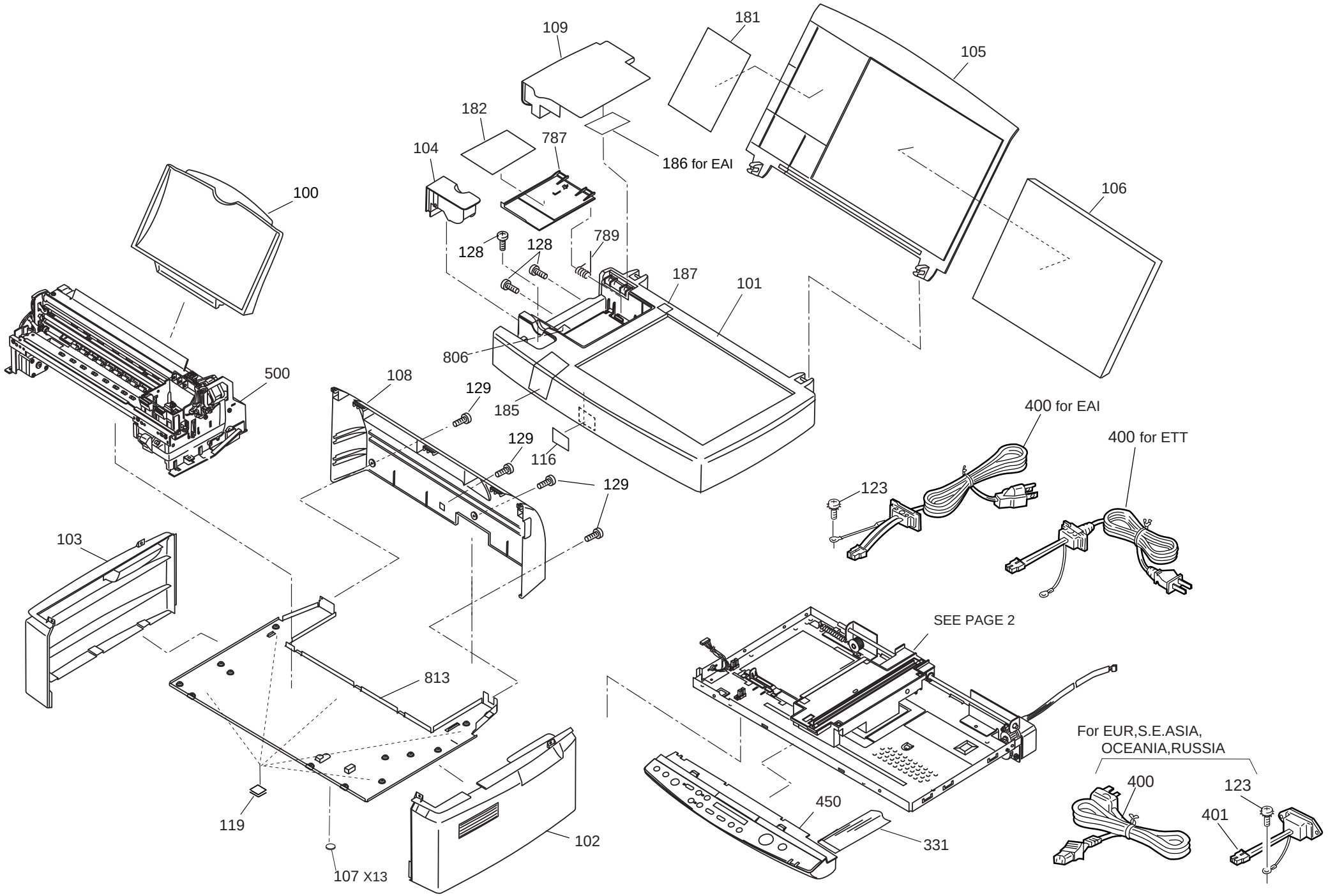
*2: Used ROM default settings in case of 00H or FFH.

*3: Changes after performing panel settings.

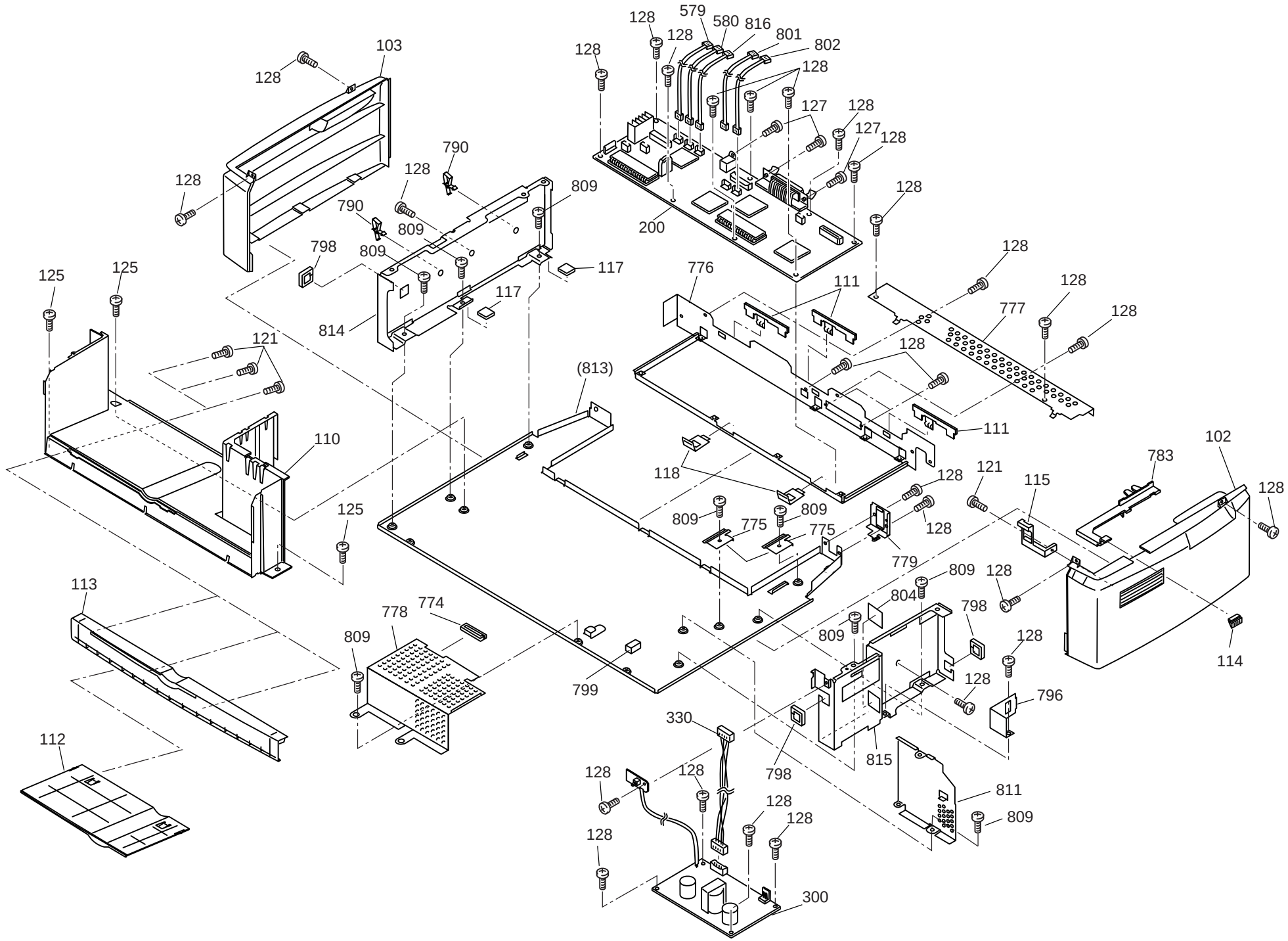
*4: Adjusted at factory

# 7.3 Exploded Diagrams

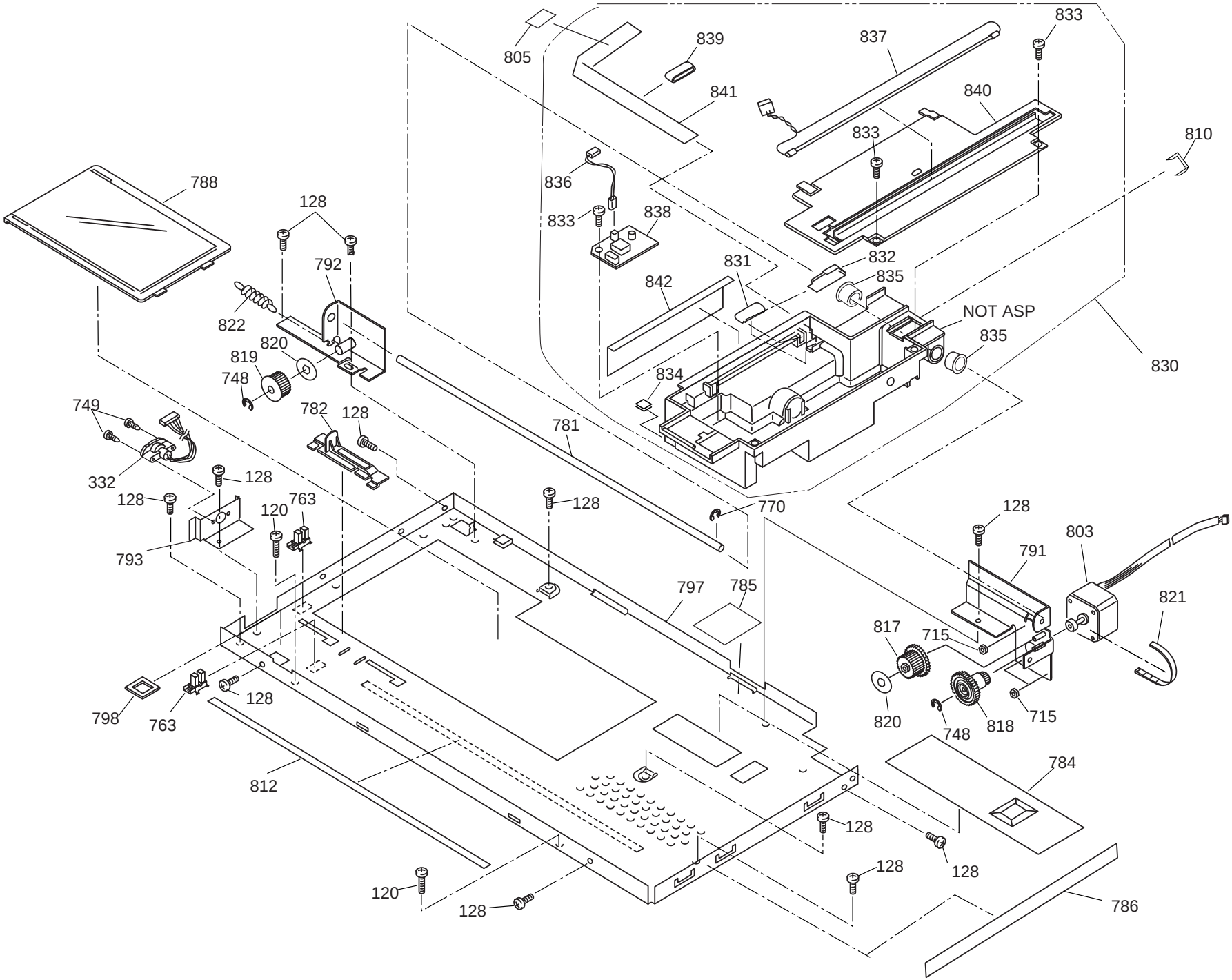
This section contains the following exploded diagrams.



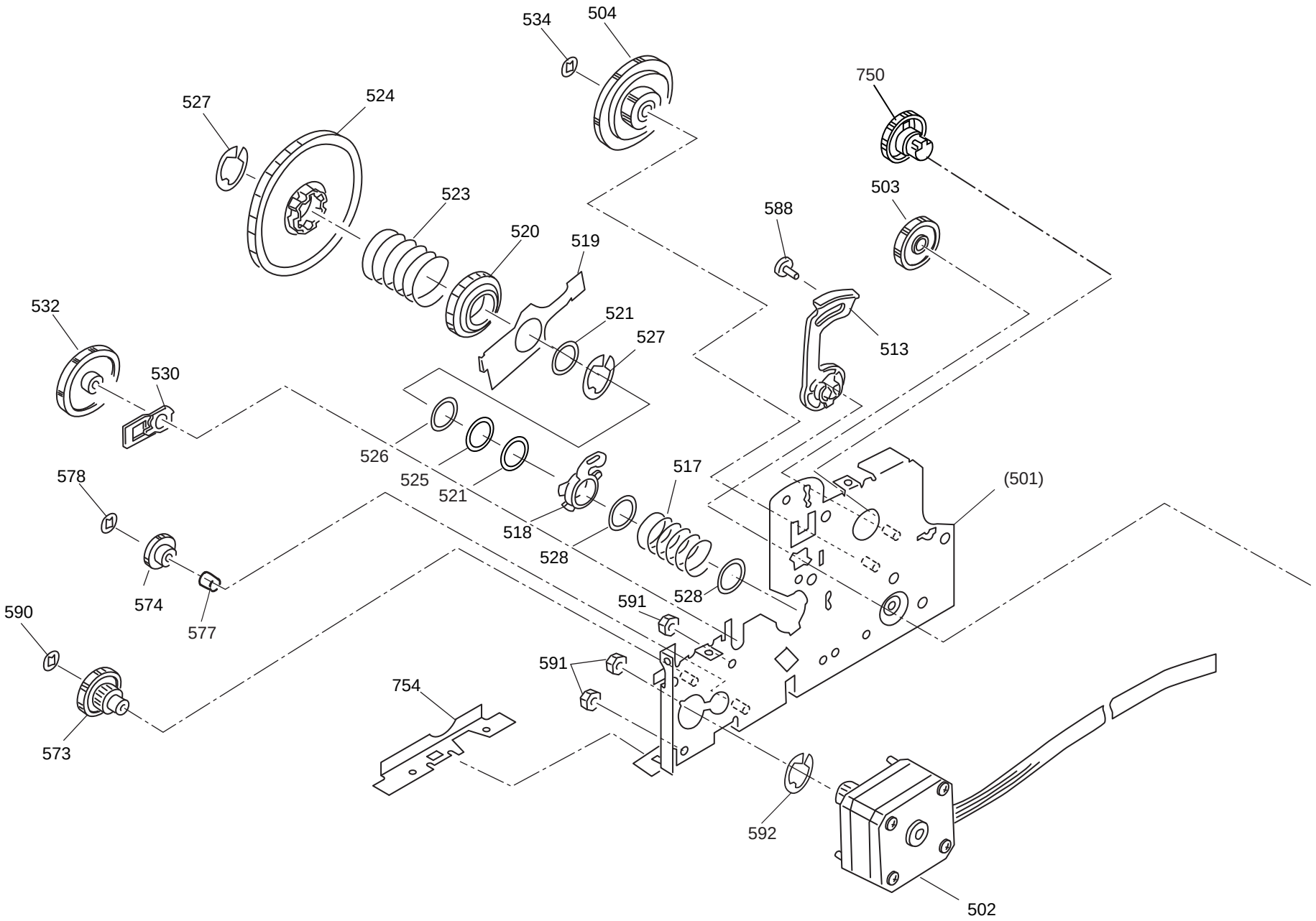

EPSON STYLUS SCAN 2500 No.1 Rev.01 10138



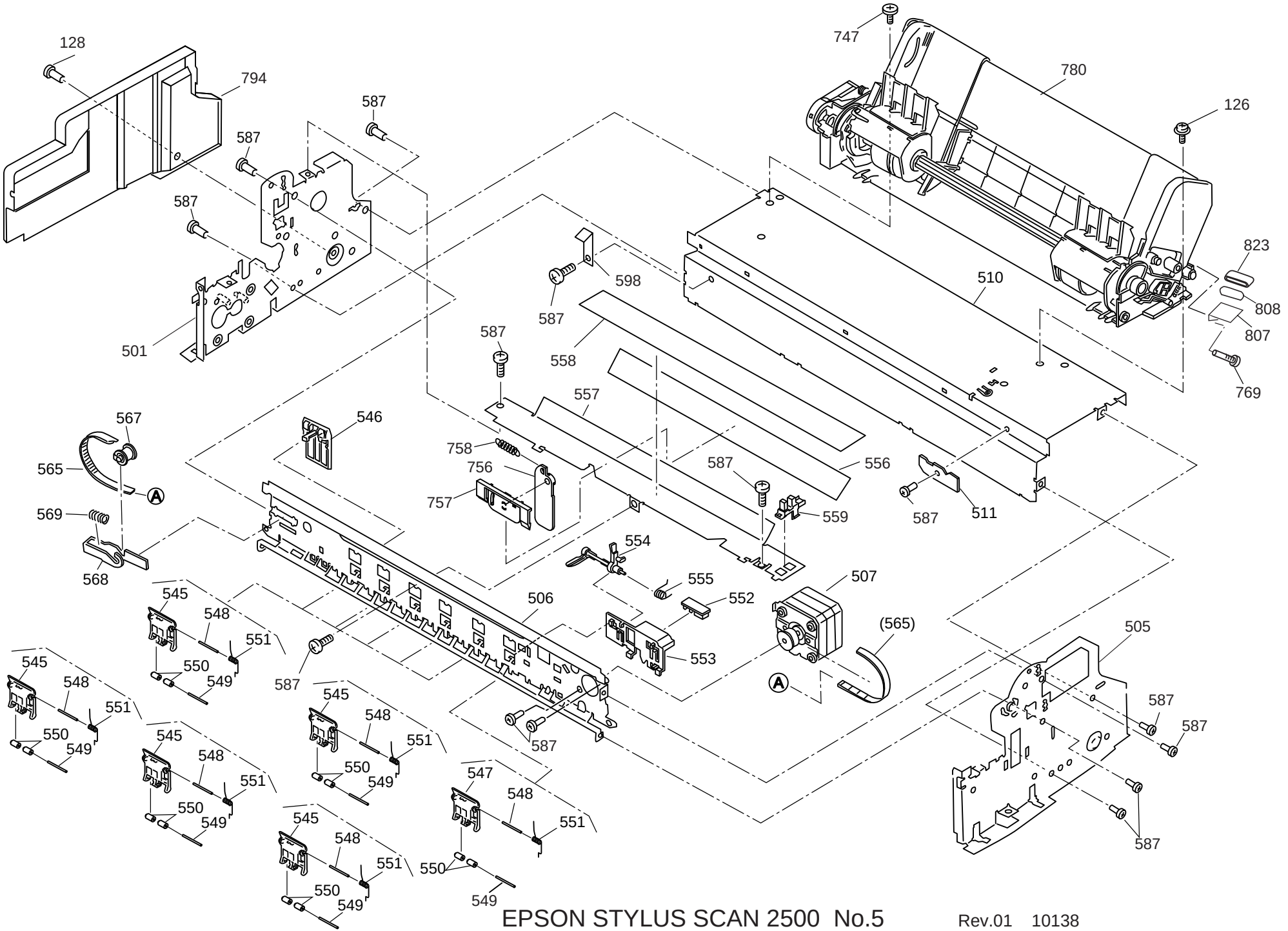

EPSON STYLUS SCAN 2500 No.2 Rev.01 10138



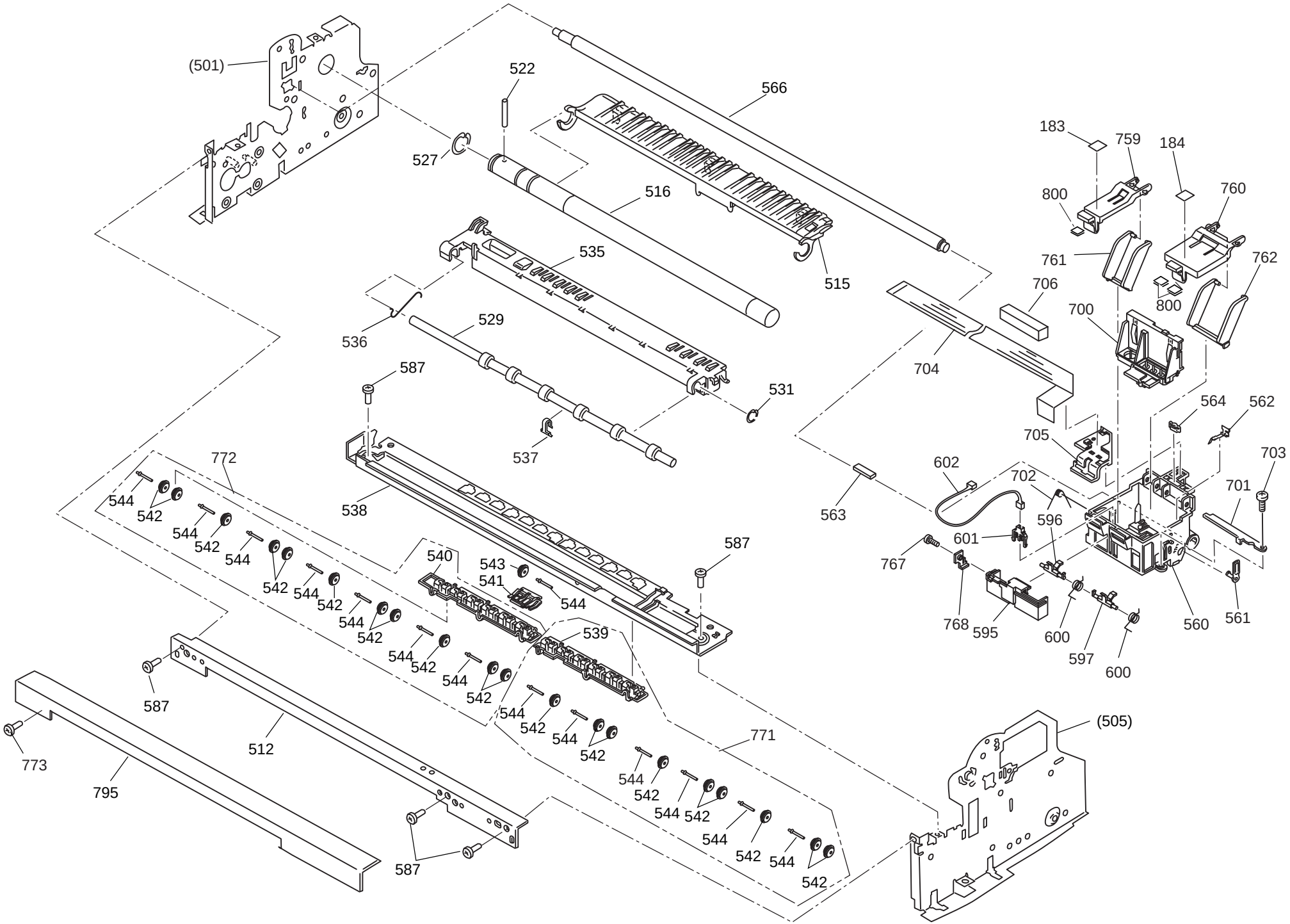

EPSON STYLUS SCAN 2500 No.3 Rev.01 10138



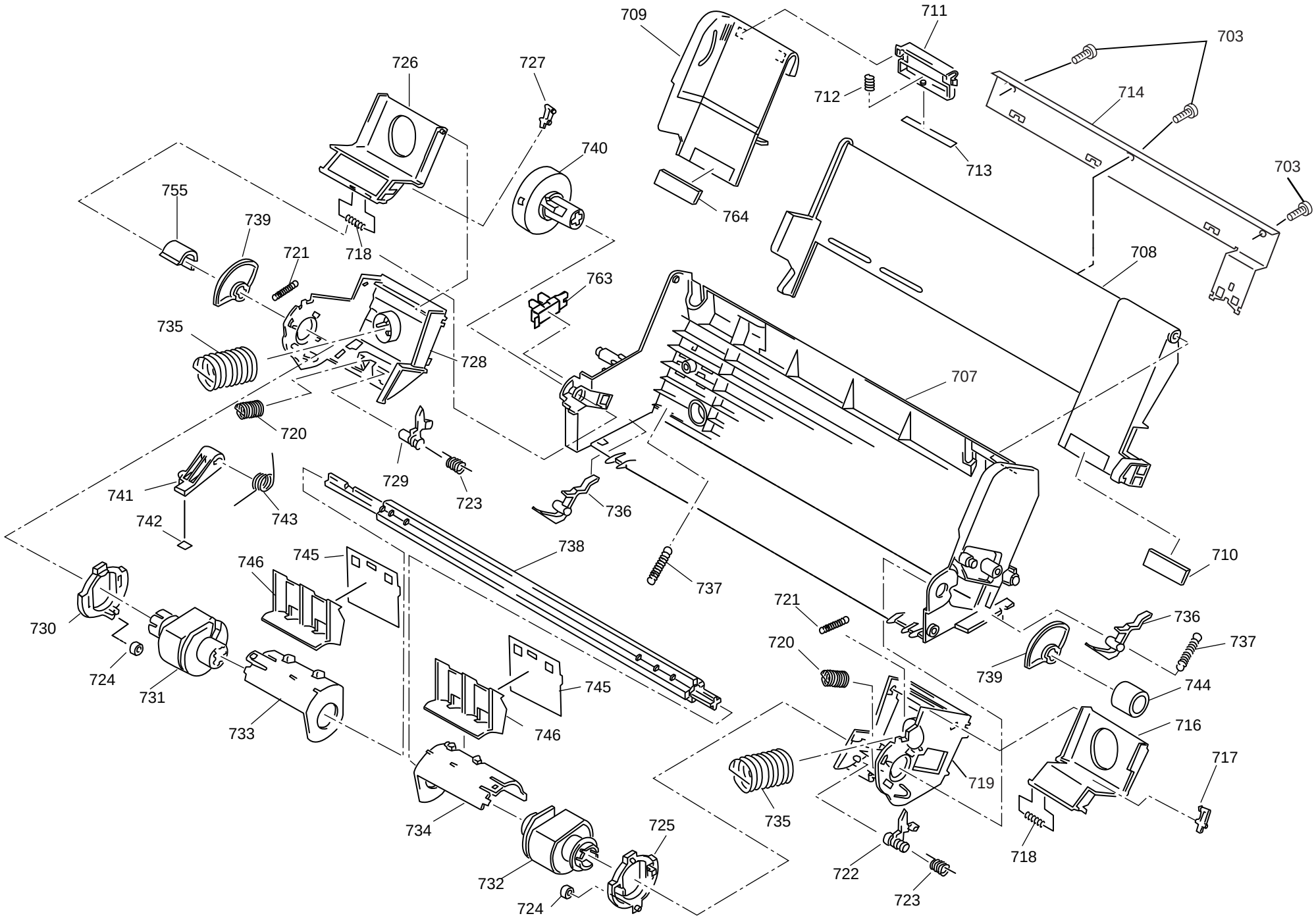

EPSON STYLUS SCAN 2500 No.4 Rev.01 10138



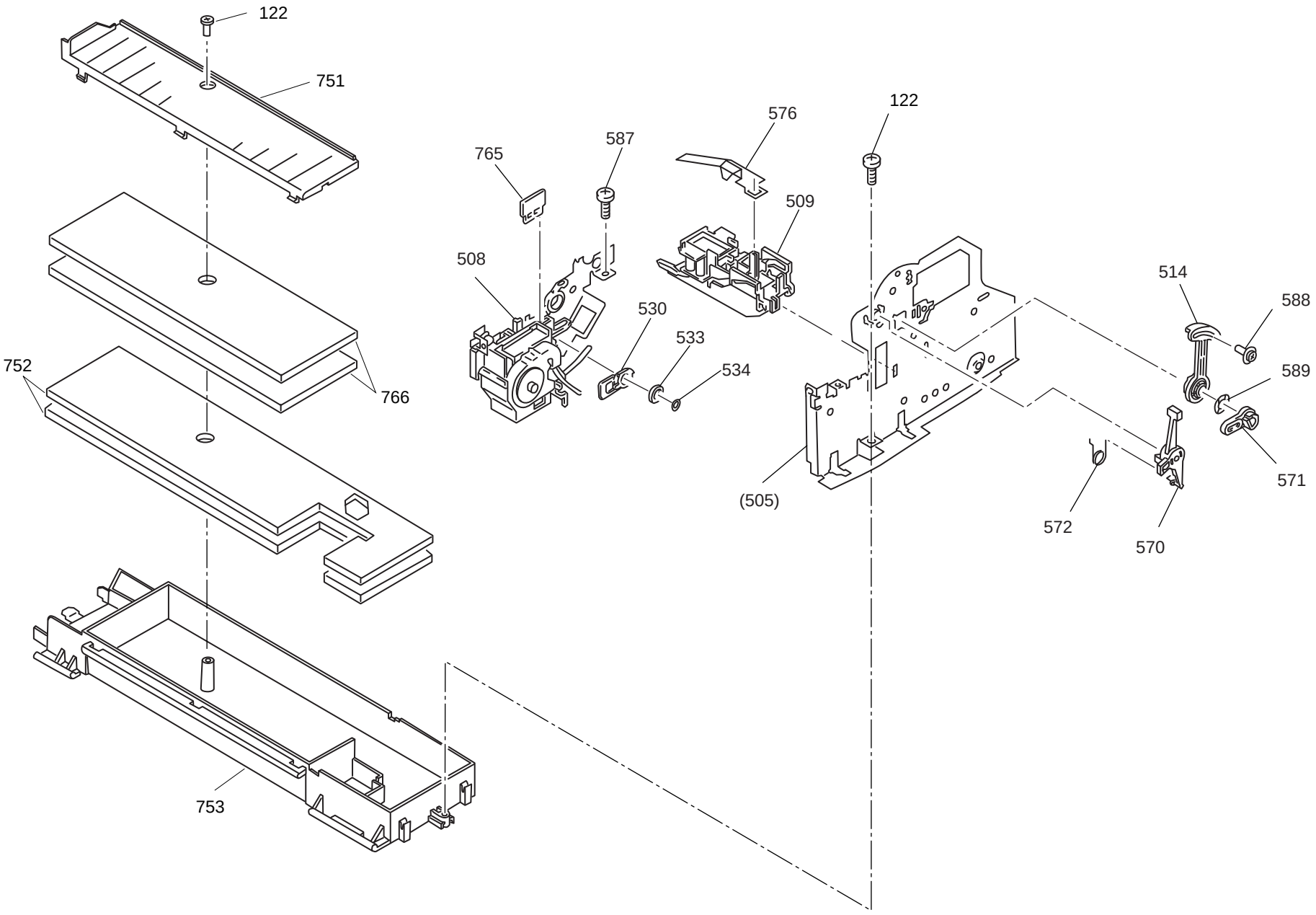

EPSON STYLUS SCAN 2500 No.5 Rev.01 10138



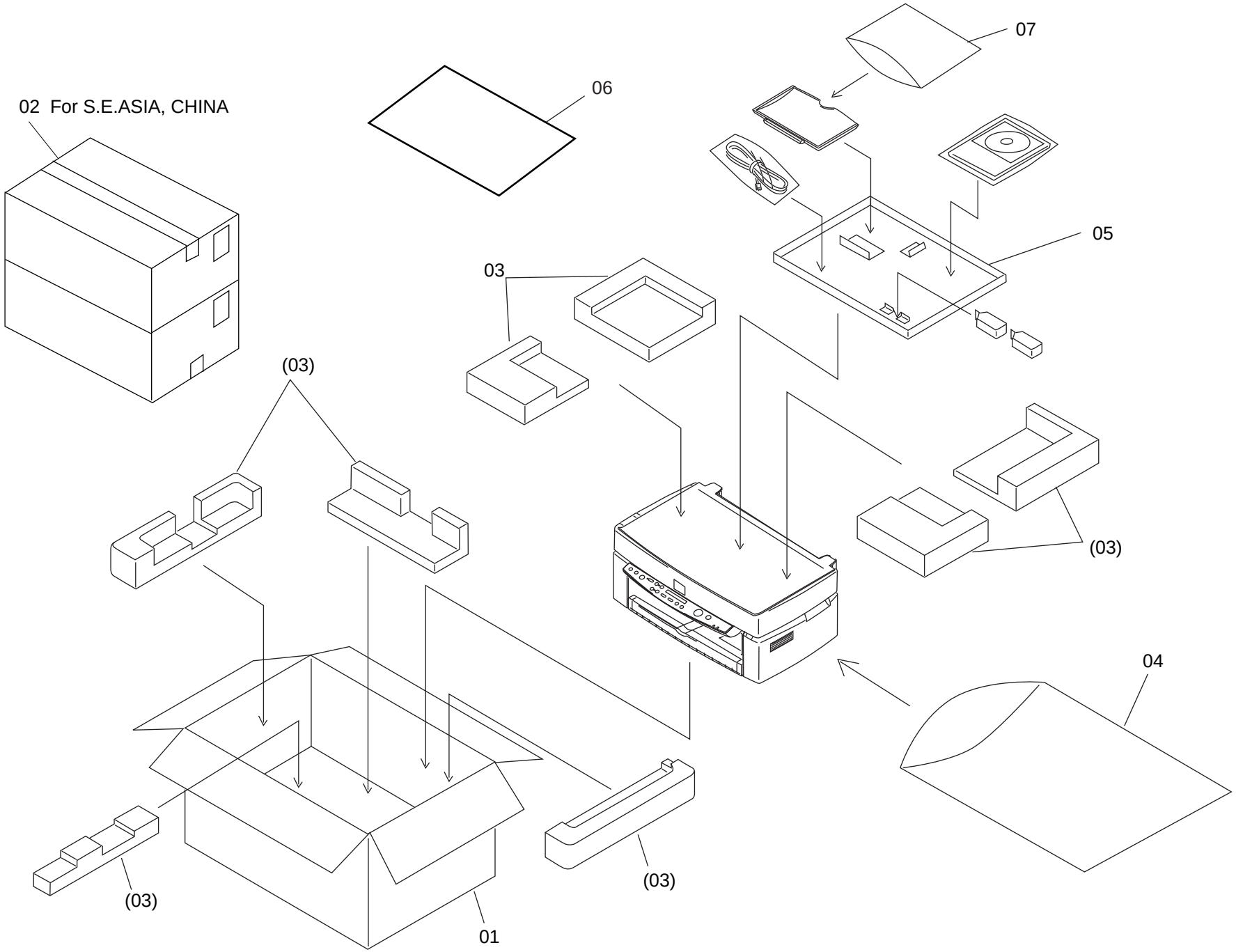

EPSON STYLUS SCAN 2500 No.6 Rev.01 10138




EPSON STYLUS SCAN 2500 No.7 Rev.01 10138




EPSON STYLUS SCAN 2500 No.8 Rev.01 10138




PACKING MATERIAL FOR EPSON STYLUS SCAN 2500 Rev.01 10138

# 7.4 Parts List

**Table 7-17. Parts List**

| ReferenceNumber | Part Name |
|---|---|
| 100 | PAPER SUPPORT ASSY. |
| 101 | HOUSING ASSY, UPPER(ASP) |
| 102 | HOUSING,R |
| 103 | HOUSING,L |
| 104 | CAP,CABLE,ADF |
| 105 | COVER,DOCUMENT |
| 106 | MAT,COVER,DOCUMENT |
| 107 | SHEET,COVER,25 |
| 108 | HOUSING,REAR |
| 109 | COVER,MAINTENANCE |
| 110 | STACKER,REAR |
| 111 | COVER,CABLE;C |
| 112 | STACKER,SUPPORT |
| 113 | STACKER,FRONT |
| 114 | KEYTOP,ADJUST,PG |
| 115 | KEYTOP,P/S |
| 116 | LOGO PLATE |
| 117 | FOOT |
| 118 | GROUNDING PLATE |
| 119 | FOOT,15 |
| 181 | LABEL,CAUTION 1 |
| 182 | LABEL,CAUTION 2 |
| 183 | LABEL,LEVER CARTRIDGE,BLACK |
| 184 | LABEL,LEVER CARTRIDGE,COLOR |
| 185 | LABEL,CARRIAGE LOCK |
| 186 | LABEL,ACCESSORY |

**Table 7-17. Parts List**

| ReferenceNumber | Part Name |
|---|---|
| 187 | LABEL,ALIGNMENT |
| 200 | BOARD ASSY.,MAIN |
| 300 | BOARD ASSEMBLY,POWER SUPPLY |
| 330 | WIRE-HARNESS |
| 331 | WIRE-HARNESS |
| 332 | WIRE-HARNESS |
| 400 | POWER CABLE ASSY. |
| 450 | CONTROL PANEL |
| 500 | PRINTER MECHANISM(ASP)M4M12-100 |
| 501 | FRAME ASSY.,LEFT |
| 502 | MOTOR ASSY.,PF |
| 503 | SPUR GEAR,23.2 |
| 504 | COMBINATIONGEAR,16,40.8 |
| 505 | FRAME,RIGHT |
| 506 | FRAME,TOP |
| 507 | MOTOR ASSY.,CR |
| 508 | PUMP ASSY. |
| 509 | CAP ASSY.;B |
| 510 | FRAME,BOTTOM |
| 511 | SHEET,PROTECTION,HEAD |
| 512 | FRAME,FRONT;B |
| 513 | BUSHING,PARALLELISM ADJUST,LEFT |
| 514 | BUSHING,PARALLELISM ADJUST,RIGHT |
| 515 | PAPERGUIDE,REAR |
| 516 | ROLLER,PF |
| 517 | COMPRESSION SPRING,5.85 |
| 518 | BUSHING,12,LEFT |
| 519 | LEVER,CHANGE |

**Table 7-17. Parts List**

| ReferenceNumber | Part Name |
|---|---|
| 520 | SPURGEAR,26.4 |
| 521 | SPACER,C-RING |
| 522 | SCALLOP SPRING PIN-AW,2X16,F/B |
| 523 | COMPRESSION SPRING,0.9 |
| 524 | SPURGEAR,73.6 |
| 525 | SPACER,FASTEN,ROLLER,PF |
| 526 | SPACER,FASTEN,ROLLER,PF;B |
| 527 | C-RING |
| 528 | PLANE WASHER,12.2X0.5X15 |
| 529 | ROLLER,ASSY.,PAPEREJECT |
| 530 | BUSHING,6 |
| 531 | RETAINING RING |
| 532 | SPUR GEAR,36 |
| 533 | SUPRGEAR,11 |
| 534 | PLANE WASHER,4.1X0.5X6.5 |
| 535 | PAPER GUIDE,FRONT;B |
| 536 | GROUNDING WIRE,EJ |
| 537 | GUIDE,PAPER EJ |
| 538 | FRAME, PAPEREJECT |
| 539 | HOLDER,STAR WHEEL,RIGHT |
| 540 | HOLDER,STAR WHEEL,LEFT |
| 541 | HOLDER,STARWHEEL,FRONT |
| 542 | STARWHEEL ASSY.,8;E |
| 543 | STARHWEEL,8;B |
| 544 | ROD SPRING,STAR WHEEL |
| 545 | PAPER GUIDE,UPPER |
| 546 | PAPER GUIDE,LEFT |
| 547 | PAPER GUIDE,RIGHT |

**Table 7-17. Parts List**

| ReferenceNumber | Part Name |
|---|---|
| 548 | SHAFT,PAPER GUIDE,UPPER |
| 549 | SHAFT,ROLLER,DRIVEN |
| 550 | ROLLER,DRIVEN;D |
| 551 | TORSION SPRING,117.6 |
| 552 | CIRCUIT ASSY,PE |
| 553 | HOLDER,PE |
| 554 | LEVER,PE |
| 555 | TORSION SPRING,0.22 |
| 556 | SHEET,GUIDE PLATE,CABLE |
| 557 | GUIDEPLATE,CABLE |
| 558 | SHEET,CABLE |
| 559 | DETECTOR,HP |
| 560 | CARRIAGE ASSY. |
| 561 | LEVER,ADJUST |
| 562 | GROUNDING PLATE,HEAD |
| 563 | OIL PAD |
| 564 | SLIDER,CR |
| 565 | TIMINGBELT |
| 566 | SHAFT,CR,GUIDE |
| 567 | PULLEY ASSY.,DRIVEN |
| 568 | HOLDER,PULLEY,DRIVEN;B |
| 569 | COMPRESSION SPRING,19.6 |
| 570 | LEVER,PG |
| 571 | LEVER,PG,SUPPORT |
| 572 | TORSION SPRING,63.7 |
| 573 | CONBINATION GEAR,12.4,28 |
| 574 | COMBINATION GEAR,16,21.6 |
| 576 | POROUS PAD,SLIDER,CAP |

**Table 7-17. Parts List**

| ReferenceNumber | Part Name |
|---|---|
| 577 | BUSHING,FASTEN,COMBINATION GEAR |
| 578 | PUSHING NUT,2 |
| 579 | HARNESS,HP |
| 580 | HARNESS,PE |
| 587 | C.B.S. SCREW |
| 588 | C.P.S-TITE(P4),3X6,F/ZN |
| 589 | LEAF SPRING |
| 590 | PLANE WASHER,6.1X0.5X9.0 |
| 591 | HEXAGON NUT,NORMAL,M3 |
| 592 | PLAIN WASHER |
| 595 | HOLDER, DETECTOR,I/C |
| 596 | LEVER,DETECTOR,I/C,BK |
| 597 | LEVER,DETECTOR,I/C,CL |
| 598 | GROUNDING PLATE,ROLLER,PF |
| 600 | TORSION SPRING,1.08 |
| 601 | DETECTOR,I/C |
| 602 | HARNESS,I/C |
| 700 | PRINT HEAD IJ288-0AA |
| 701 | FASTENER,HEAD |
| 702 | TORSION SPRING,49 |
| 703 | C.B.P-TITE SCREW,3X6,F/ZN |
| 704 | CABLE,HEAD |
| 705 | HOLDER,CABLE |
| 706 | SPACER,CABLE HEAD |
| 707 | FRAME,ASF;B |
| 708 | HOPPER |
| 709 | EDGEGUIDE |
| 710 | CORK |

**Table 7-17. Parts List**

| ReferenceNumber | Part Name |
|---|---|
| 711 | SLIDER,EDGEGUIDE |
| 712 | COMPRESSION SPRING,3.23 |
| 713 | PAD,BREAK,EDGE GUIDE |
| 714 | REINFORCEMENT PLATE,HOPPER |
| 715 | HEXAGON NUT,NORMAL,M3 |
| 716 | PAD ASSY.,RIGHT |
| 717 | LEVER,PAD,RELEASE,RIGHT |
| 718 | ROD SPRING,HOLDER,PAD |
| 719 | HOLDER,EDGEGUIDE,RIGHT |
| 720 | COMPRESSION SPRING,1.17 |
| 721 | EXTENSION SPRING,0.62 |
| 722 | LEVER,PAPERRETURN,RIGHT |
| 723 | EXTENSION SPRING,0.294 |
| 724 | ROLLER,LD,SUPPORT |
| 725 | HOLDER,ROLLER,LD,SUPPORT,RIGHT |
| 726 | PAD ASSY.,LEFT |
| 727 | LEVER,PAD,RELEASE,LEFT |
| 728 | HOLDER,EDGEGUIDE,LEFT |
| 729 | LEVER,PAPERRETURN,LEFT |
| 730 | HOLDER, ROLLER,LD,SUPPORT,LEFT |
| 731 | ROLLER ASSY.,LD,LEFT |
| 732 | ROLLER ASSY.,LD,RIGHT |
| 733 | COVER,ROLLER,LD,LEFT |
| 734 | COVER,ROLLER,LD,RIGHT |
| 735 | COMPRESSION SPRING,1.961 |
| 736 | LEVER,FASTEN,EDGEGUIDE;B |
| 737 | EXTENSION SPRING,0.088 |
| 738 | SHAFT,ROLLER,LD |

**Table 7-17. Parts List**

| RefernceNumber | Part Name |
|---|---|
| 739 | LEVER,HOPPER,RELEASE |
| 740 | WHEEL,DETECT |
| 741 | LEVER,BRAKE |
| 742 | PAD,BREAK |
| 743 | TORSION SPRING,41.2 |
| 744 | BUSHING,FASTEN,SHAFT |
| 745 | SHEET,PAPERFEED |
| 746 | HOLDER,SHEET,PAPERFEED |
| 747 | SHAFT,MOUNT,CR |
| 748 | RETAINING RING |
| 749 | C.B.P.SCREW,2.5X6,F/ZN |
| 750 | SPURGEAR,34 |
| 751 | PAPERGUIDE,LOWER |
| 752 | POROUSPAD,INKEJECT,LARGE |
| 753 | TRAY,PORUSPAD |
| 754 | SPACER,TRAY |
| 755 | BUSHING,FASTEN,SHAFT,LEFT |
| 756 | PAPER SUPPORT,SUUPPORT,UPPER |
| 757 | HOLDER,PAPERSUPPORT,SUPPORT,UPPER |
| 758 | EXTENSION SPRING,0.29 |
| 759 | COVER,CARTRIDGE,BK |
| 760 | COVER,CARTRIDGE,C |
| 761 | SEPARATOR,CARTRIDGE,BK |
| 762 | SEPARATOR,CARTRIDGE,C |
| 763 | DETECTOR,HP |
| 764 | CORK;B |
| 765 | CLEANER,HEAD,ASP |
| 766 | POROUSPAD,INKEJCT,SMALL |

**Table 7-17. Parts List**

| RefernceNumber | Part Name |
|---|---|
| 767 | C.P.B.(O) SCREW,1.7X5,F/ZN |
| 768 | BUSHING,HOLDER,DETECTOR,I/C |
| 769 | C.B.P-TITE SCREW,4X10,F/ZN |
| 770 | RETAINING RING |
| 771 | HOLDER ASSY.,STAR WHEEL,RIGHT,ASP |
| 772 | HOLDER ASSY.,STAR WHEEL,LEFT,ASP |
| 773 | C.C.S. SCREW |
| 774 | COVER,CABLE;B |
| 775 | BRACKET,PRINTER |
| 776 | SHIELD PLATE,M/B |
| 777 | SHIELD PLATE,M/B,SUPPORT |
| 778 | SHIELD PLATE,P/S |
| 779 | COVER,INLET |
| 780 | ASF UNIT;C |
| 781 | SHAFT,CR,SC |
| 782 | LOCK,CARRIAGE |
| 783 | LEVER,ADJUST,PG |
| 784 | SHEET,CABLE,SC |
| 785 | SHEET,CABLE,SUPPORT,SC |
| 786 | SHEET,HOUSING |
| 787 | COVER,CARRIAGE,I/C |
| 788 | SHUTTER |
| 789 | TORSION SPRING,5.2 |
| 790 | MINICLAMP,YMC-15-0 V0 |
| 791 | BRACKET ASSY.,PULLEY,DRIVE |
| 792 | BRACKET ASSY.,PULLEY,DRIVEN |
| 793 | BRACKET,OP |
| 794 | COVER,GEAR |

**Table 7-17. Parts List**

| ReferenceNumber | Part Name |
|---|---|
| 795 | FRAME,FRONT,SUPPORT |
| 796 | GROUNDING PLATE,P/S |
| 797 | FRAME,MAIN ASSY. |
| 798 | BUSHING,EDGE |
| 799 | FOOT,P/S |
| 800 | SPACER,COVERCATRIDGE |
| 801 | HARNESS,CM |
| 802 | HARNESS,HP,SC |
| 803 | MOTOR,CR,SC |
| 804 | SHEET,P/S;B |
| 805 | PAD,FFC |
| 806 | LOCK,SUPPORT |
| 807 | BRAKET,CORE,SC |
| 808 | DOUBLE SIDE TAPE,28X10 |
| 809 | C.B.S-TITE,4X5,F/ZN |
| 810 | CLAMP,TIMING BELT |
| 811 | FRAME,FRONT |
| 812 | SHEET,SLIDE |
| 813 | FRAME,BOTTOM |
| 814 | FRAME,SIDE,L |
| 815 | FRAME,SIDE,R |
| 816 | HARNESS,ASF |
| 817 | PULLEY,DRIVE |
| 818 | PULLEY,IDLE |
| 819 | PULLEY,DRIVEN |
| 820 | FRANGE,PULLEY |
| 821 | TIMING BELT |
| 822 | EXTENSION SPRING,18.4 |

**Table 7-17. Parts List**

| ReferenceNumber | Part Name |
|---|---|
| 823 | FERRITE CORE |
| 830 | CARRIAGE UNIT,SC |
| 831 | DOUBLE SIDE TAPE,28X10 |
| 832 | CLAMP,FERRITE CORE |
| 833 | C.C.P-TITE,3X8,F/ZB |
| 834 | FOOT,CARRIAGE |
| 835 | CARRIAGE GUIDE SHAFT HOLDER |
| 836 | HARNESS |
| 837 | LAMP ASSY. |
| 838 | BOARD ASSY.,INVERTER |
| 839 | FERRITE CORE |
| 840 | COVER,CARRIAGE |
| 841 | WIRE-HARNESS |
| 842 | SHEET,CCD |
| 1 | INDIVIDUAL CARTON BOX,FOR AMERICA |
| 3 | PAD SET,SPC |
| 4 | PLASTIC PROTECTIVE BAG 720X800X0.05T |
| 5 | PAD,ACCESSORY |
| 6 | PAD,COVER,DOCUMENT |
| 7 | PLASTIC PROTECTIVE BAG,315X305X0.05T |

## 7.5 Component Layouts

- ☐ B102 MAIN Board 1
- ☐ B102 MAIN Board 2
- ☐ B102 PSB Board
- ☐ B102 PSE Board

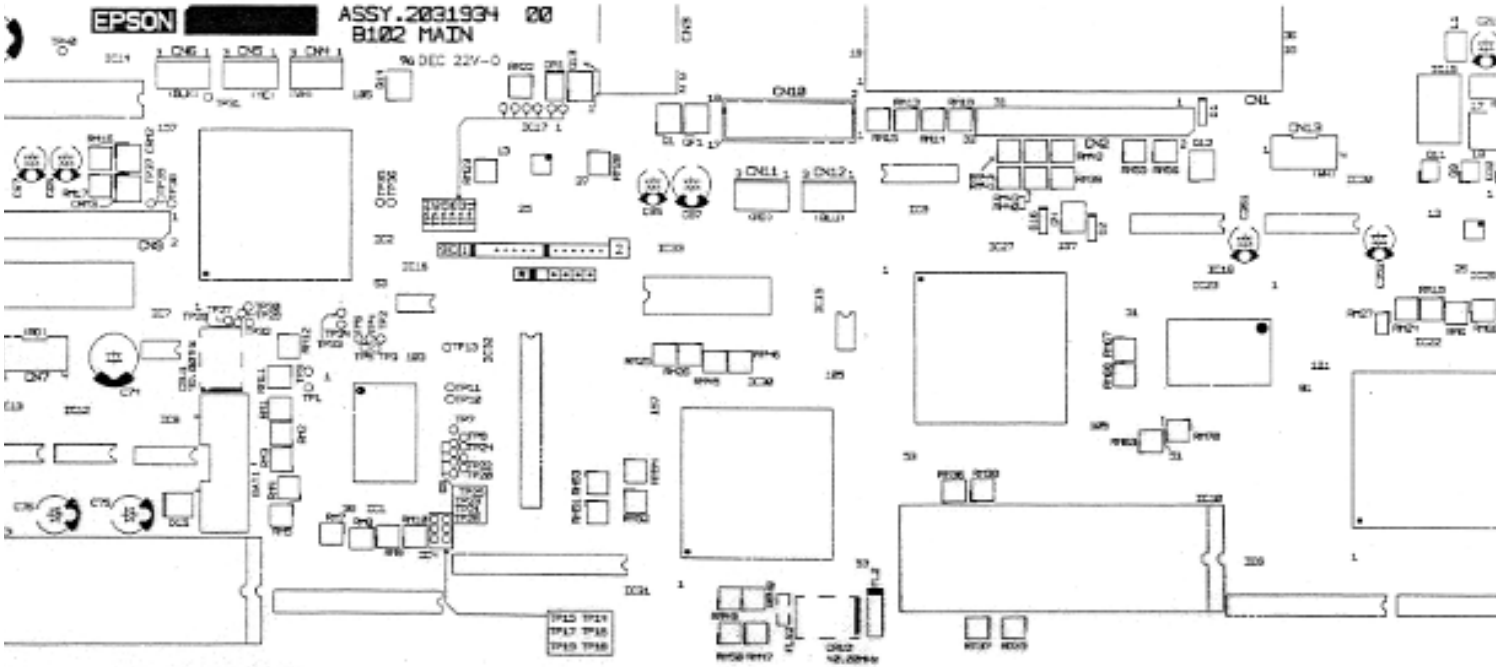



**Figure 7-2. B101 MAIN Component Layout 1**

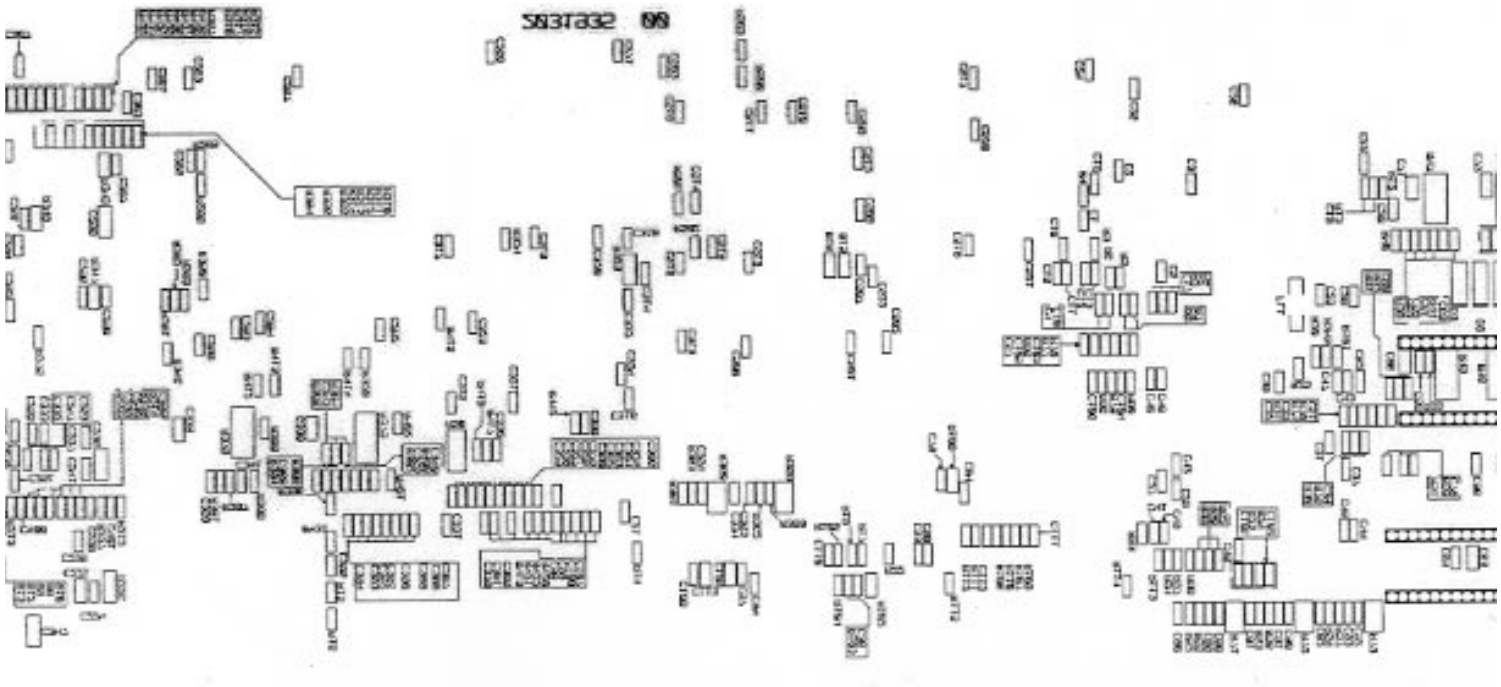


**Figure 7-3. B101 MAIN Component Layout 2**

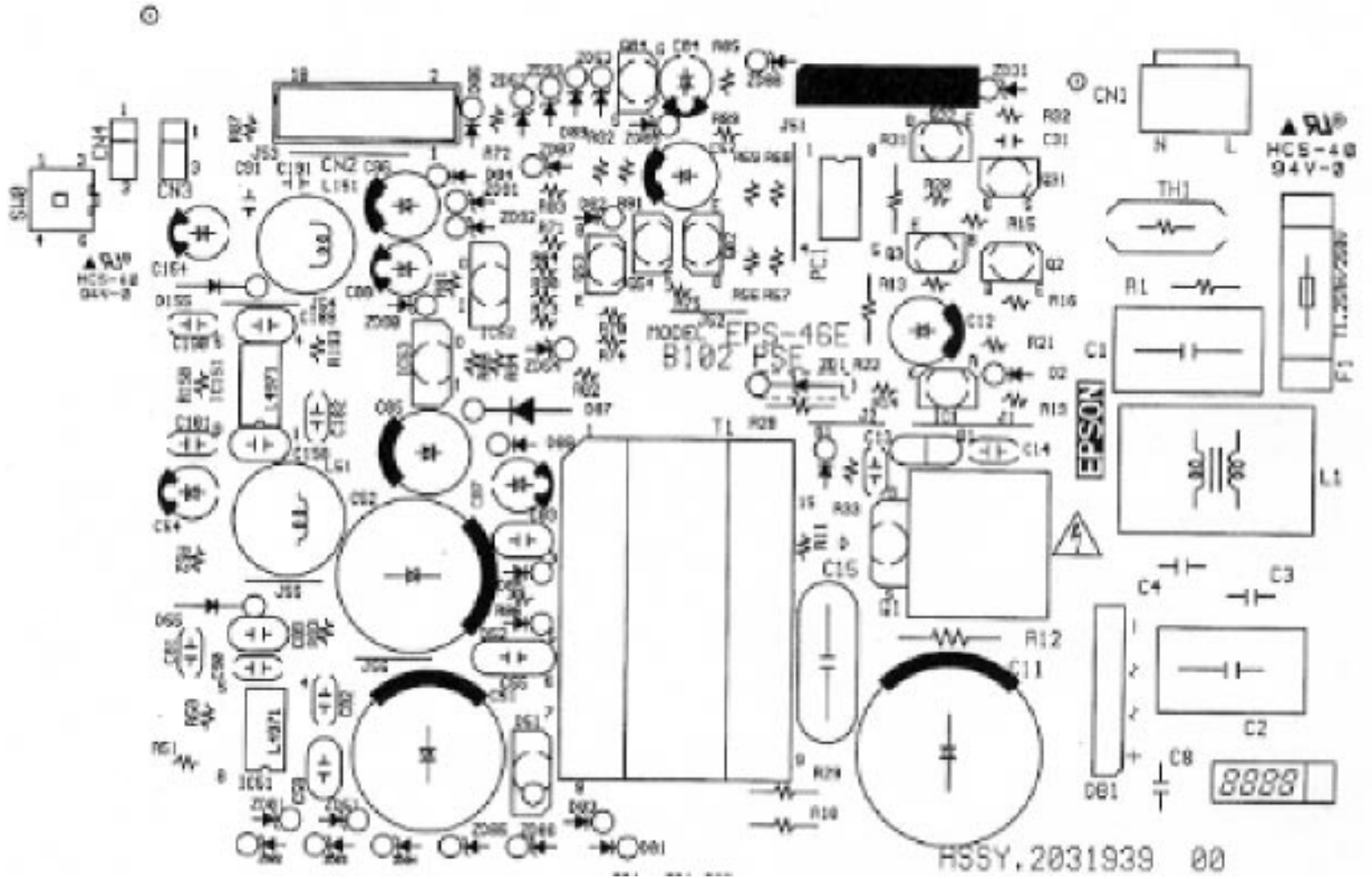



**Figure 7-4. B102 PSE Board Component Layout**

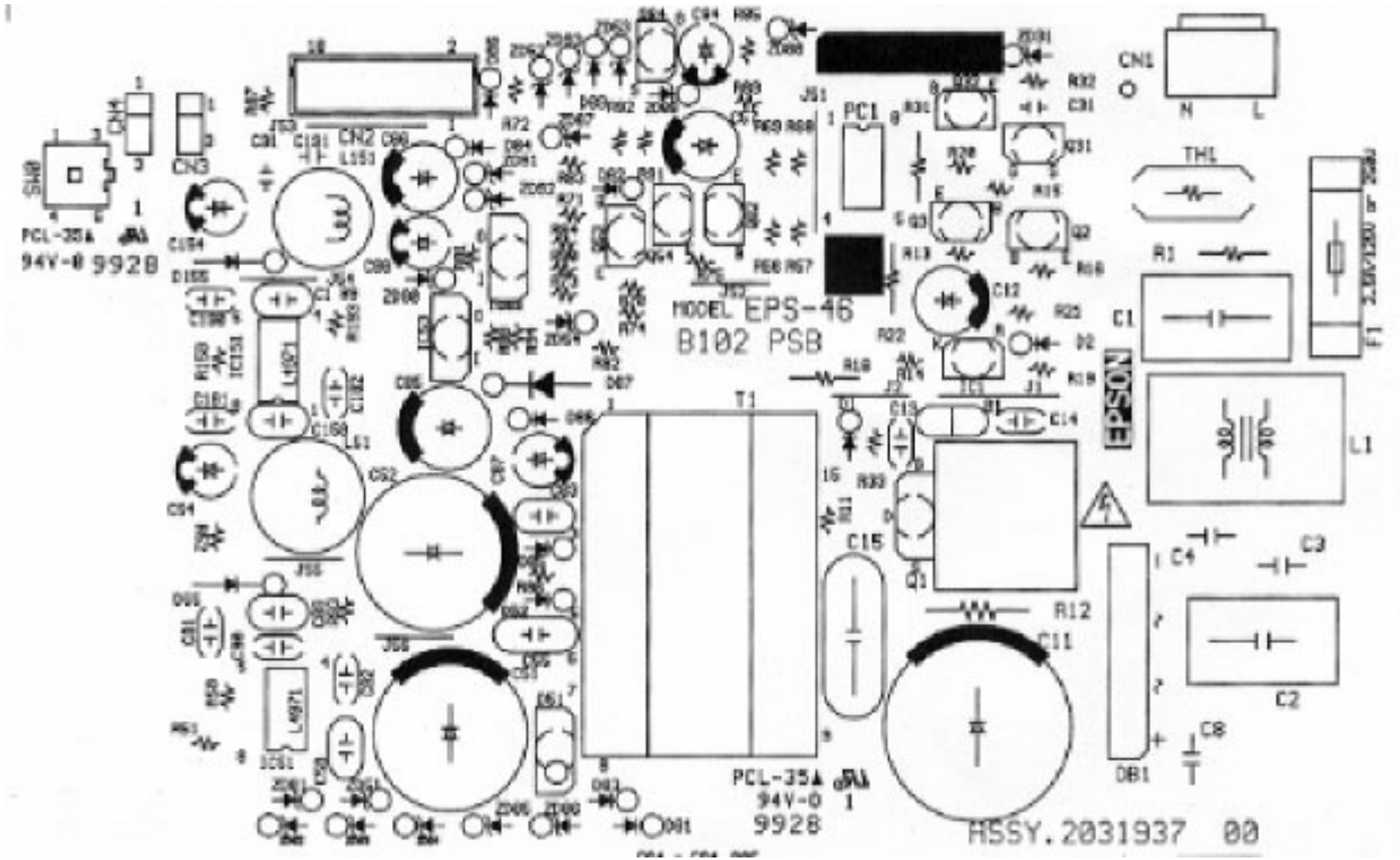
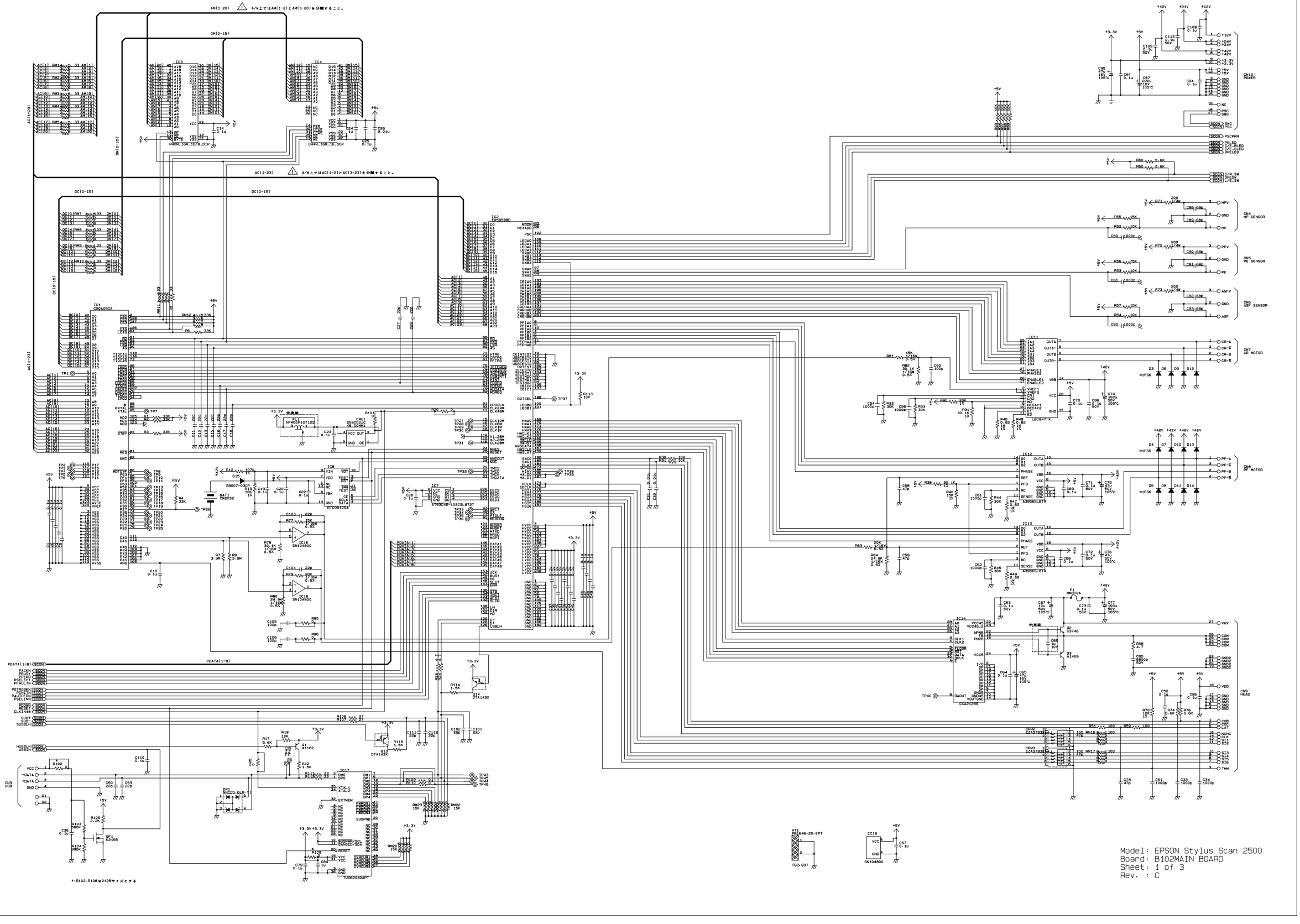


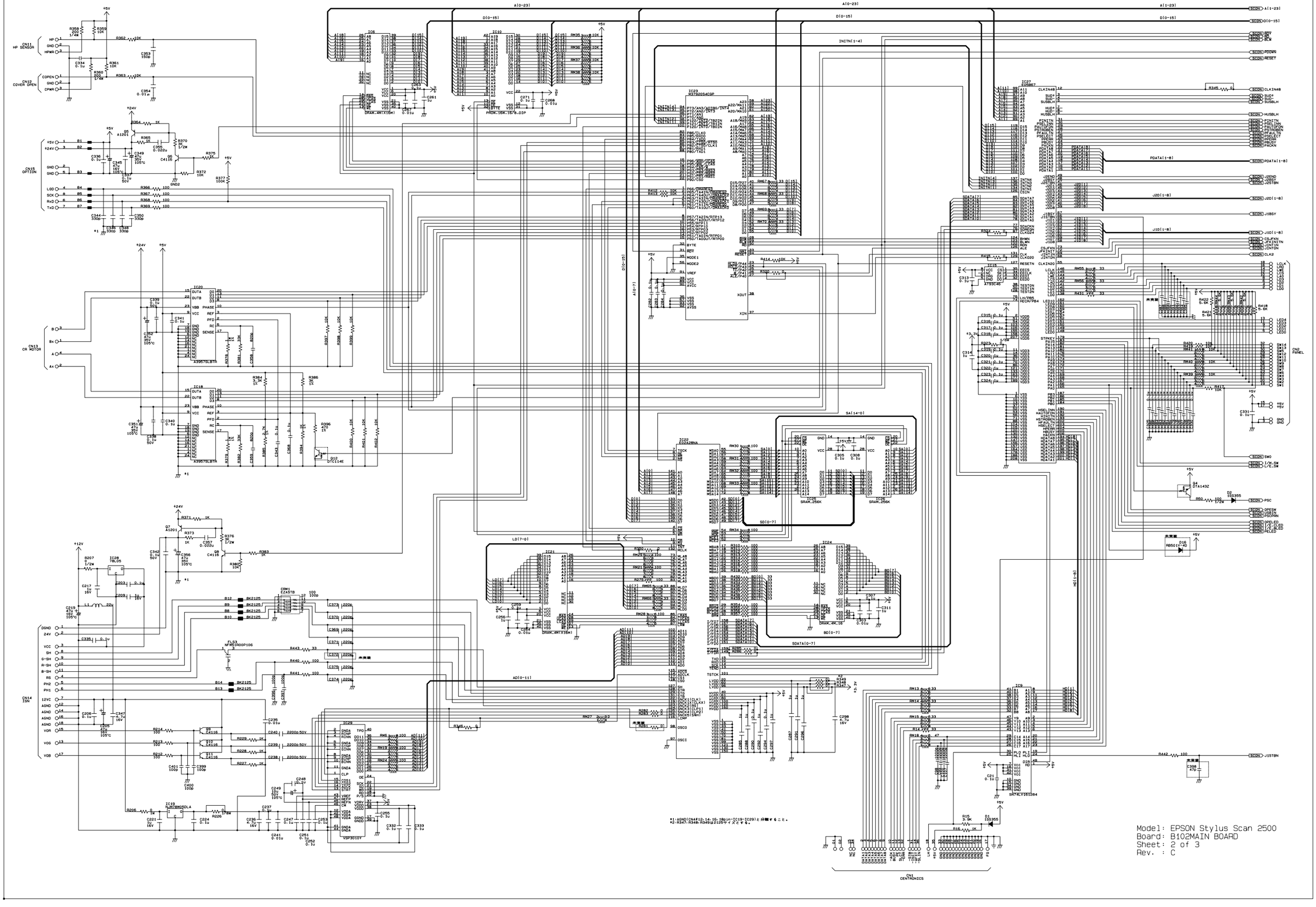

**Figure 7-5. B102 PSB Board Component Layout**

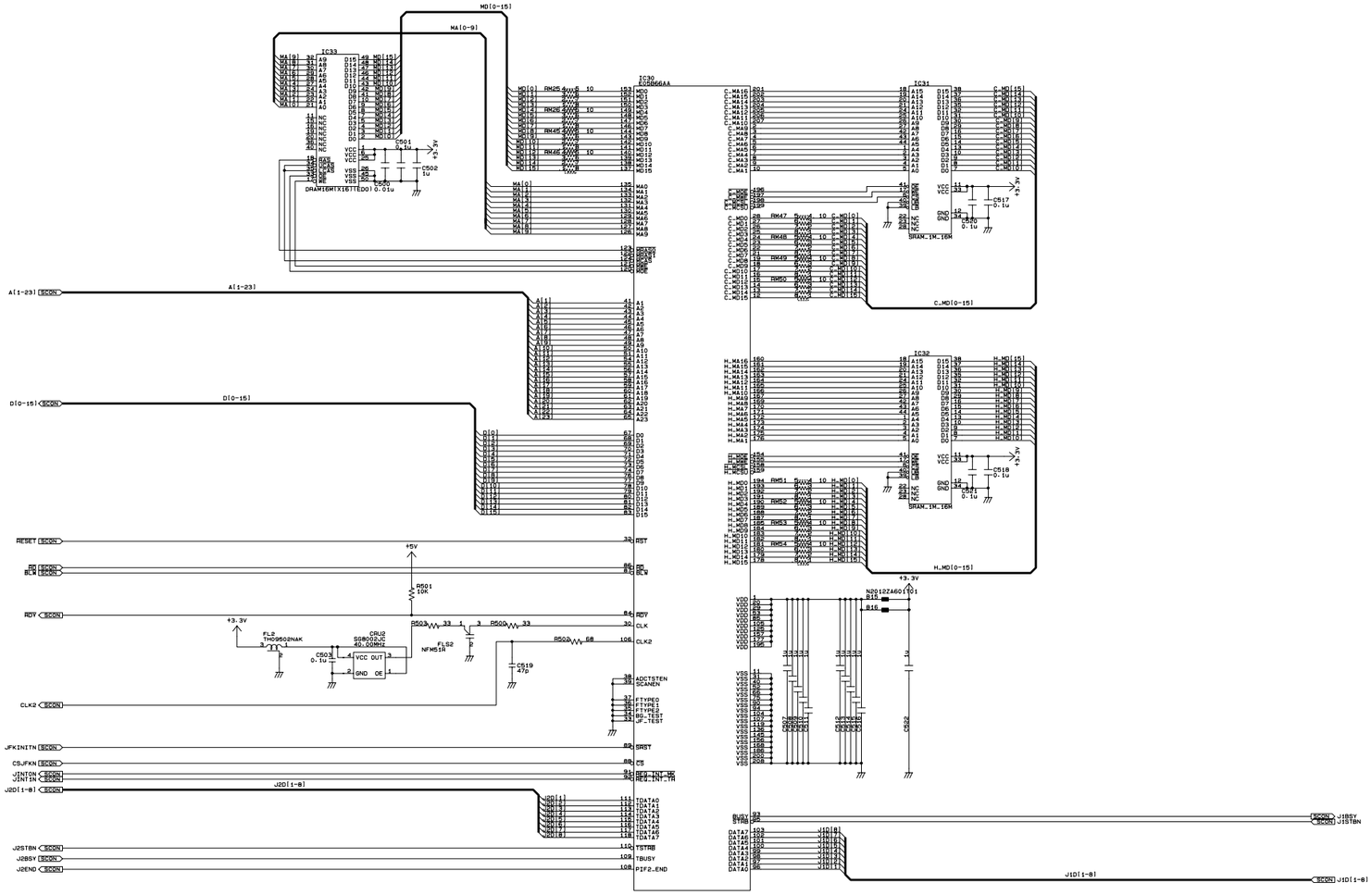
## 7.6 Circuit Diagrams

This section contains the following circuit diagrams.

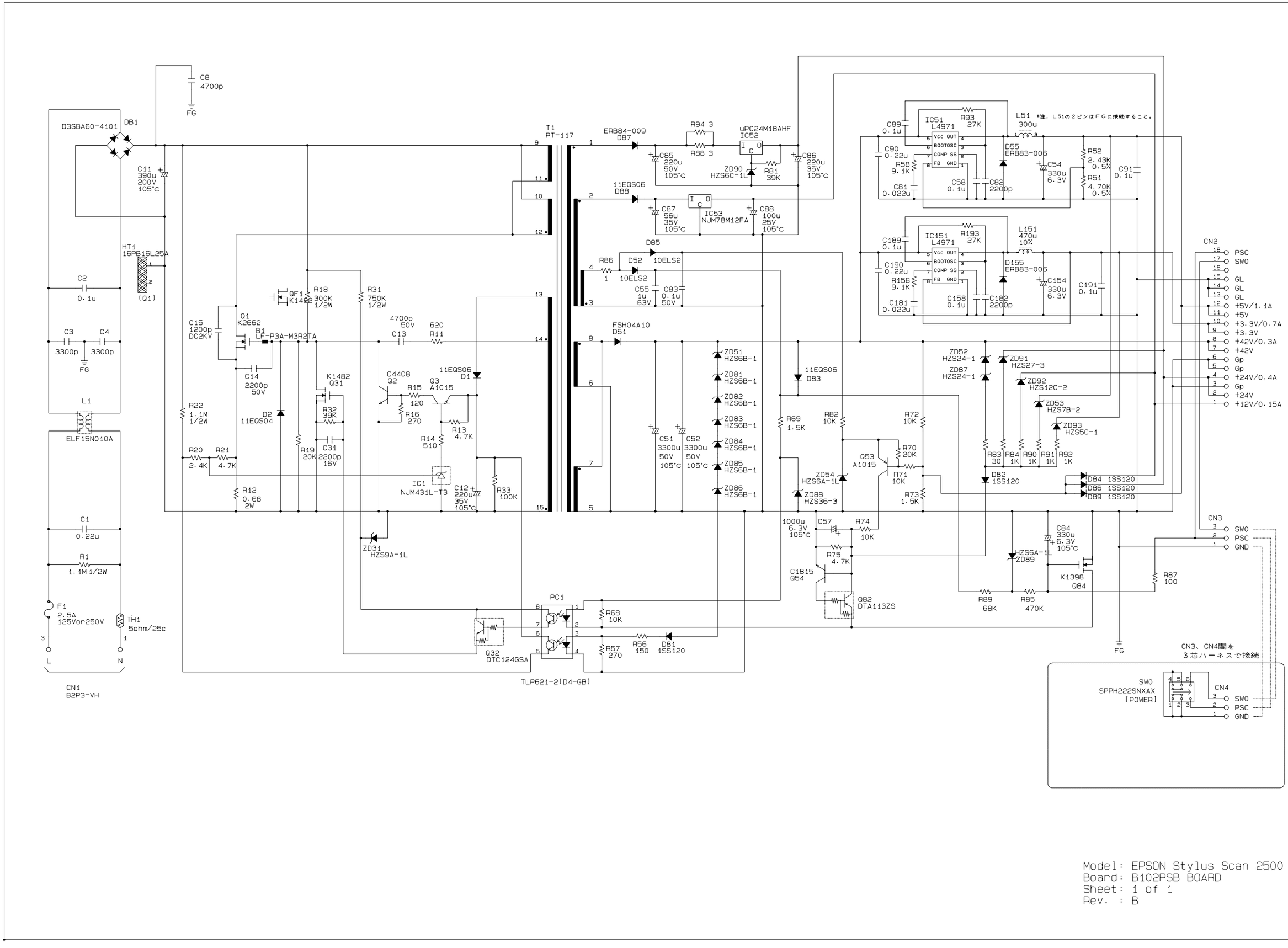
- B101 MAIN Board (x3)
- B101 PSB Board
- B101 PSE Board


AM[1-20]
A/W上ではAM[1-2]とAM[3-20]を分離すること。
DM[0-15]
AC[1-23]
A/W上ではAC[1-2]とAC[3-23]を分離すること。
DC[0-15]
IC1 C90A005CA
IC2 LU0858BD
IC3 PROM_16M_16/8.DIP
IC4 DRAM_16M_16_SOP
IC5 NFM61R10T102
IC6 S8007-03CP
IC7 AT93C46
IC8 RTC9810SA
IC9 SN104800
IC10 SN104800
IC11 LB1847-K
IC12 A3956SLBTR
IC13 A3956SLBTR
IC14 CXA2128S
IC16 SN104800
IC17 TUSB2040APT
BAT1 CR2032
CN1 POWER
CN2 PSCPRN
CN3 USB
CN4 HP SENSOR
CN5 PE SENSOR
CN6 ASF SENSOR
CN7 CR MOTOR
CN8 PF MOTOR
CN9 HEAD
CN10 POWER
CN11 I/F_SW
CN12 OPESW
CN13 I/F_LED
CN14 OPELED
PDATA[1-8]
*:R102・R108は2125サイズとする
Model: EPSON Stylus Scan 2500
Board: B102MAIN BOARD
Sheet: 1 of 3
Rev. : C

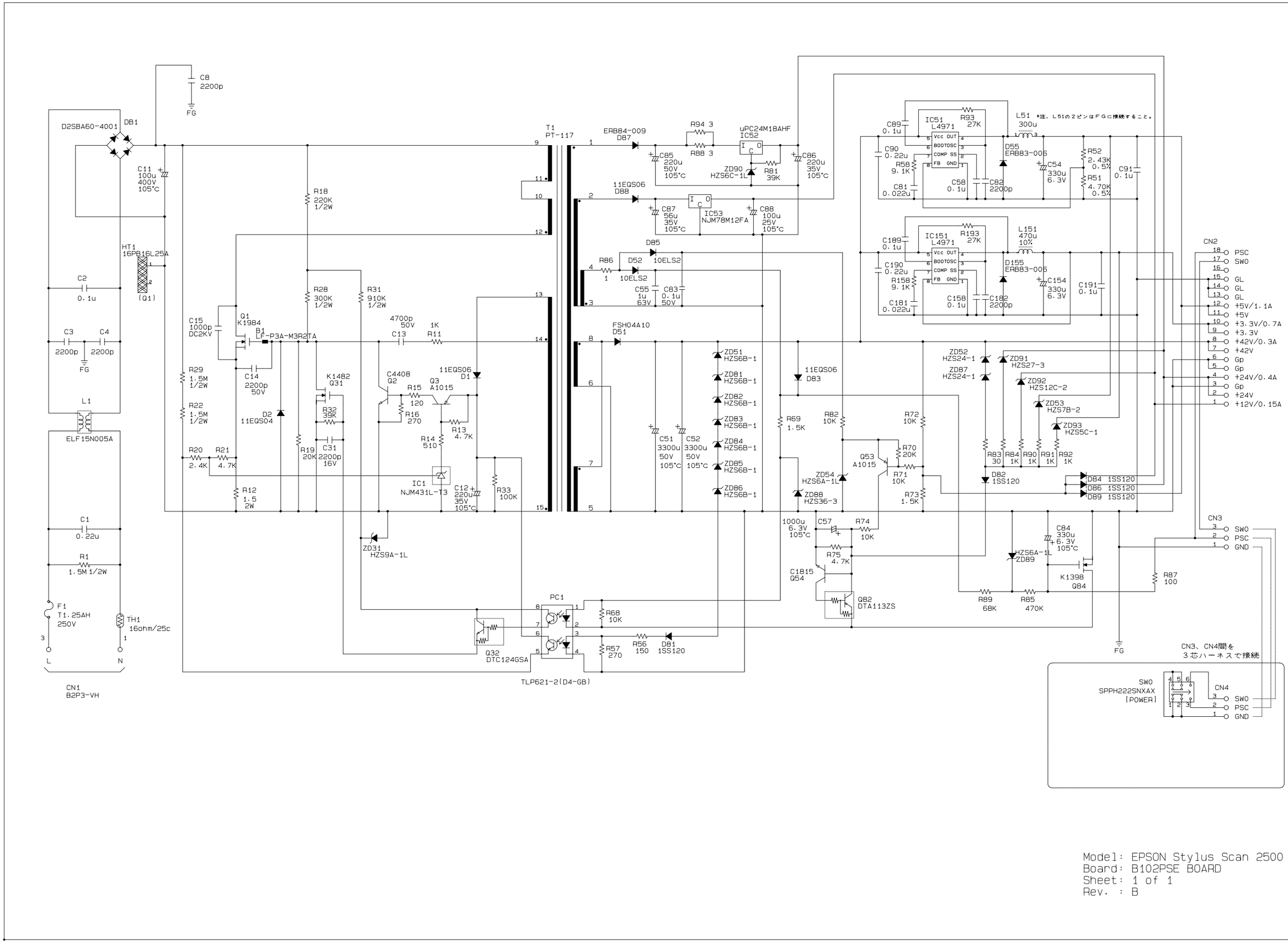

CN11 HP SENSOR
CN12 COVER OPEN
CN15 OPTION
CN13 CR MOTOR
CN14 ISN
CN2 PANEL
CN1 CENTRONICS
IC7 ASIC
IC8 DRAM_4MX16(W)
IC10 PROM:16K:16/8.DIP
IC29 M37920S4CGP
IC2 E0328NA
IC25 SRAM_256K
IC26 SRAM_256K
IC24 DRAM_4M_16
IC21 DRAM_4MX16(W)
IC20 A3957SLBTR
IC18 A3957SLBTR
IC19 NJM78M05DL-A
IC28 78L05
IC9 SN74LV161284
IC15 AT93C46
CRM1 EZA5TB
FLS3 NFM51R00P106
VSP3010Y
A[0-23]
D[0-15]
INITN[1-4]
SA[14-0]
SD[0-7]
LD[7-0]
AD[0-11]
SDATA[0-7]
HD[1-0]
PDATA[1-8]
J2D[1-8]
J1D[1-8]
*1: AGND(CN4#10,14,16,18pin-IC19-IC29)と分離すること。
*2: R347/R348/R349は2125サイズとする。
Model: EPSON Stylus Scan 2500
Board: B102MAIN BOARD
Sheet: 2 of 3
Rev. : C




Model: EPSON Stylus Scan 2500
Board: B102MAIN BOARD
Sheet: 3 of 3
Rev. : C




Model: EPSON Stylus Scan 2500
Board: B102PSB BOARD
Sheet: 1 of 1
Rev. : B




Model: EPSON Stylus Scan 2500
Board: B102PSE BOARD
Sheet: 1 of 1
Rev. : B